

*Engineers Australia
Engineering Heritage Victoria*

Nomination

Engineering Heritage Australia Heritage Recognition Program

J CLASS SUBMARINE

IN ROYAL AUSTRALIAN NAVY SERVICE



June 2018

Front Cover Photograph Caption

J3 in Royal Australian Navy Service.

The J class were large, fast and advanced submarines when they entered service at the end of the First World War however they did not reach their potential in Australian service as they arrived at a time when military capability was despised and the coming menace of Germany and Japan had not yet been appreciated.

Image: Royal Australian Navy

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1 Introduction

Australia is a large island with a very long coastline and lies between the great expanses of the Pacific, Indian and Southern Oceans with most of our close neighbours, and potential enemies, occupying the myriad of islands and the coast of South East Asia to our north. Almost all of our trade, both inwards and outwards is carried by ships.

It is therefore imperative that Australia has a large and strong Navy. However our population base is small, many of our neighbours expect Australia to provide them with some degree of regional maritime protection and we have global obligation through our traditional and treaty obligations to keep watch over the seas around us.

Australia was slow to realise the potential of the submarine as part of its naval defence strategy. Several tentative starts were made to develop an Australian submarine capability but it was not until the late 1960s, with the commissioning of the Oberon class submarines that such a capability became a reality.

Maintaining a credible submarine capability is not an easy task. Australia's military planners have, in recent decades, firmly grasped the reality that a submarine fleet can give Australia a powerful multi-task capability at an affordable price. It should therefore be no surprise that in the last four decades Australia has operated one of the most effective conventional (diesel-electric) submarine operations in the world¹.

However it was not always so!

Australia purchased two submarines just before the outbreak of World War I – they were named AE1 and AE2 but their service lives were very short. AE1 was lost at the very beginning of World War I off the coast of New Guinea and its wreck was not found until very recently. AE2 became famous when it broke through the Dardanelles just prior to the ANZAC landings and caused severe disruption of the Turkish war effort for a few days until it was sunk, without loss of life and the crew spent the rest of the war in Turkish prisons. This wreck site is now honoured by both Australia and Turkey.

That was the last submarine activity in World War I for Australia.

In the early 1920s Australia was gifted six J class submarines from the Royal Navy. These were the latest and largest submarines built by the RN for service in World War I. They were competent but were in service with the Royal Navy for only a short time before the end of the war.

¹Owen Peake. Submarines in Australia - from indecision to success. 16TH Engineering Heritage Conference, Hobart, 2011. Page 1.

Once in Australia they were placed into service but there was little appetite for submarines or in fact any other military endeavour in the early 'twenties'. The world was exhausted from a long and dirty war followed by a devastating Influenza Epidemic. The J class boats were soon retired and sunk as breakwaters or scuttled in the ship graveyard area off the mouth of Port Phillip Bay.

Engineering Heritage Victoria is revisiting the rather sad demise of the 'J boats' on several grounds.

Firstly these submarines marked a significant engineering maturing in the design of submarines which contributed to the continuing development of the diesel-electric submarine which remains, to this day, an important asset of many maritime countries, including Australia.

Secondly the 'J boats' are part of our engineering heritage even if they contributed little to the defence of Australia.

Thirdly the story of the 'J boats' reminds us to be vigilant and determined, as a nation, in the never-ending task of defending ourselves. We failed to provide ourselves with a fleet of submarines in the run-up to the Second World War and had to depend on the brave and competent endeavours of our United States and British submariners counterparts to defeat a very determined Japan force in the Pacific.

In the 1960s we acquired the very competent Oberon class submarines from Britain and they served us well although they were never seriously used on a war footing. In the 1990s, with the Oberons retired with full honours we took the brave step of building our own submarines. The Collins class boats which emerged, after long and often bitter controversy, soon proved to be not only competent but probably the best conventional submarines the world had seen. When the Collins class boats retire they will be replaced by French-built submarines.

There is a little bit of the 'J boats' in all the successful conventional submarines Australia has, and ever will, own. The 'J boat' story is part of the engineering heritage story of submarines in Australia. We hope that the engineers will always be able to provide our submariners with boats which are 'good enough' to do the exacting and dangerous work that they carry out to protect Australia.

2 Heritage Award Nomination Letter

Learned Society Advisor
Engineering Heritage Australia
Engineers Australia
Engineering House
11 National Circuit
BARTON ACT 2600

Name of work: J class submarines in Australian Service

The above-mentioned work is nominated to be awarded an Engineering Heritage National Marker.

The remains of the six J class submarines substation are scattered around Port Phillip Bay and its environs.

Owner: There is no acknowledged owner of these wrecks. They have long-since been disposed of by the Royal Australian Navy.

Access to site: None of the wrecks are readily accessible nor should they be approached without permission of the site owners in the case of the two used as breakwaters. J3 at Swan Island is in a Military Exclusion Area and is therefore out of bounds to the general public. J7 is located within the marina of the Sandringham Yacht Club within a secure area and can only be approached with permission of the club. The four boats scuttled in the ship disposal area on the seaward side of Port Phillip Heads are in deep water and can only be approached by suitable equipped and experienced divers.

All the wreck sites are potentially very dangerous.

The Nominating Body for this nomination is Engineering Heritage Victoria

David LeLievre
Chair
Engineering Heritage Victoria

Date: June 2018

3 Heritage Assessment

3.1 Basic Data

3.1.1 Class Members

Class No.	Builder	Laid Down	Launched	Completed	Fate
J1	Portsmouth Dockyard	1915	6/11/1915	1916	Sold by RAN 26/2/1924 Scuttled in the ship graveyard 4 kilometres W-SW of the Port Phillip Heads.
J2	Portsmouth Dockyard	1915	6/11/1915	1916	Sold by RAN 26/2/1924 Scuttled in the ship graveyard 4 kilometres W-SW of the Port Phillip Heads.
J3	Pembroke Dockyard	1915	4/12/1915	1916	Sold by RAN 1/1926 Scuttled as a breakwater at Swan Island just inside the Port Phillip Heads. City of Greater Geelong.
J4	Pembroke Dockyard	1915	2/2/1916	8/1916	Sold by RAN 26/2/1926 Scuttled in the ship graveyard 4 kilometres W-SW of the Port Phillip Heads.
J5	Devonport Dockyard	1915	9/9/1915	4/1916	Sold by RAN 26/2/1926 Scuttled in the ship graveyard 4 kilometres W-SW of the Port Phillip Heads.
J6	Devonport Dockyard	1915	1915	1916	Sunk 15/10/1918 whilst in RN service
J7	Devonport Dockyard	1916	21/2/1917	11/1917	Sold by RAN 11/1929 Scuttled as a breakwater at Sandringham Yacht Club. Bayside City Council

3.1.2 Other/Former Names: Nickname - *Reaper*

3.1.3 Location: Present locations see table above in 3.1.1

3.1.4 State: Victoria

3.1.5 Local Govt. Area: Local Government areas see table above in 3.1.1 – relevant only to J3 and J7.

3.1.6 Owner: Initially Royal Navy (RN) then transferred to Royal Australian Navy (RAN) then sold for scrap and scuttled in Victorian waters.

3.1.7 Current Use: J3 and J7 are currently deployed as breakwaters. Other bopats are sunk or scuttled at sea.

3.1.8 Former Use: Naval submarines

3.1.8 Designer: Royal Navy

3.1.9 Maker/Builder: Refer to table at 3.1.1

3.1.10 Year Started: 1915 and 1916 (J7 only)

3.1.11 Year Completed: 1916 and 1917 (J7 only)

3.1.12 Physical Description: The J class submarine was a conventional submarine powered by three diesel engine for surface running and battery charging whilst being equipped with batteries and electric motors for submerged running. It was a large submarine at the time of its construction with a range of 8000 km (radius of operations) and armed primarily with torpedos and a deck gun.

This boat would appear quite familiar to present-day observers of submarines as the basic structure and purpose of conventional (non-nuclear) submarines has changed little over the ensuing 90 years.

3.1.13 Specification:

- Displacement: 1,210 UK tons (1234.2 Tonnes) surfaced, 1,820 UK tons² (1856.4 Tonne) submerged
- Length: 275.5 feet (84 m)
- Beam: 23 feet (7 m)
- Draught: 14 feet (4.3 m)
- Test Depth: 300 feet (91 m)
- Machinery: Three Vickers 12 cylinder in-line solid injection, 4 cycle, diesel engines, 14.5 inch bore (368.3 mm) by 14 inch stroke (355.6 mm), 1200 indicated horsepower @ 380 RPM for a total of 3600 HP. Three screws. Two x Mather & Platt electric motors of 1400 horsepower each for a total of 2800 HP. Four battery banks each of 58 cells.
- Speed: 19.5 knots (36.1 km/h) surfaced, 9.5 knots (17.6 km/h) submerged)
- Diesel Oil carried: 91 tons (92.8 Tonnes)
- Radius: 5,000 miles (8050 km) at 12.5 knots (23 km/h) surfaced.
- Armament: 6 x 18 inch (457 mm) torpedo tubes (4 bow, 2 beam); 1 x 4 inch (102 mm) deck gun
- Complement: 5 officers and 40 seamen



***Interior views of the J class submarine: 1 Control Room with periscope, top left; 2 one of the three diesel engines, top right and 3 Control Room, bottom.
Image: Maritime Archaeological Association of Victoria (MAAV).***

²Some references quote 1760 tons for submerged displacement.

3.1.14 Physical Condition:

Only 7 boats of this class were built in three Royal Navy Dockyards:

- Pembroke Dock, Pembrokeshire, south west Wales. On Milford Haven. Two boats (J3 & J4) were built here.
- Devonport Dockyard, near Devonport, Devonshire, south west England. On the Tamar River. Three boats (J5, J6 & J7) were built here.
- Portsmouth Dockyard, Portsmouth, Hampshire south east England. On The Solent, facing the English Channel. Two boats (J1 & J2) were built here.

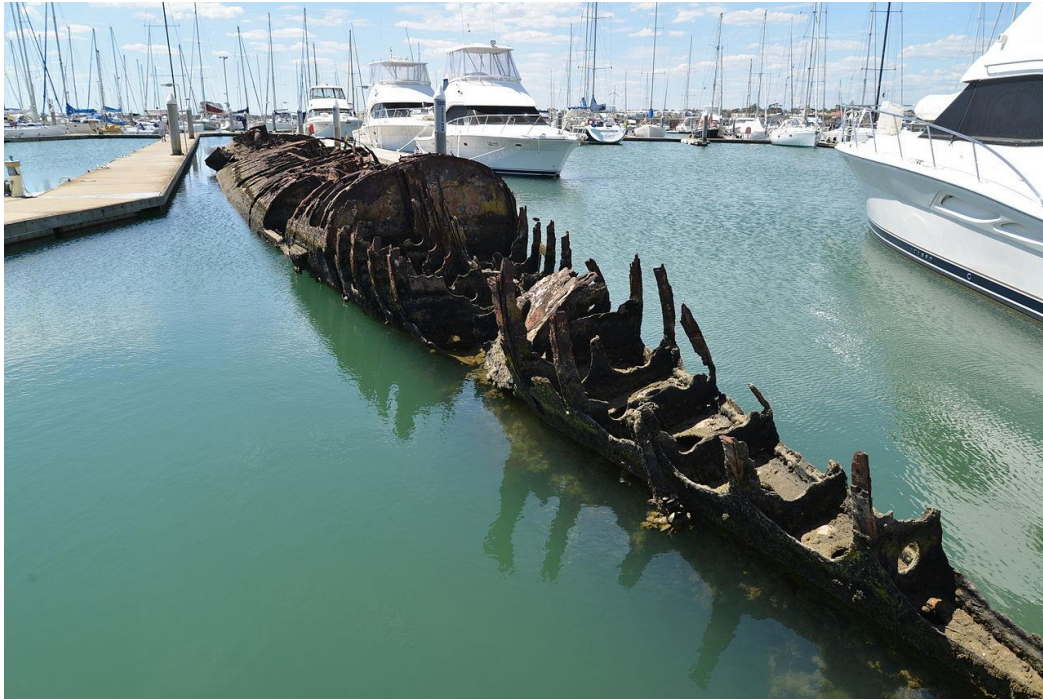
J6 was sunk in the North Sea during World War I by friendly fire.

The remaining six boats were transferred to the Royal Australian Navy after World War 1.

The wrecks of all these boats now lie in Victorian Waters. Four are in Bass Strait just outside the Port Phillip Heads. These are probably more complete as they are fully submerged. The other two (J3 at Swan Island and J7 at Sandringham Yacht Club) have been used as breakwaters. These two boats are more deteriorated as their steel hulls have been exposed to periodic immersion over a very long time. The condition of these boats is shown in the images below.



J3 as a breakwater at Swan Island, Port Phillip Bay. Note the severe deterioration of the hull. Image: Royal Australian Navy.



J7 as a breakwater at Sandringham Yacht Club. Image: Sandringham Yacht Club.

None of the boats have therefore been preserved in any sense. Whilst J3 & J7 can be inspected and photographed quite easily only those parts above the waterline can be inspected. Viewing of the boats lost or scuttled at sea is even more difficult requiring deep diving.

Photographic records of the interior of the submarines whilst they were in service are rare or non-existent. This is an area for further research.

3.2 Historical Notes

The J class of submarines were designed in 1915 when rumours began circulating around the Admiralty that the Germans were building a new large type of submarine with a surface speed of 22 knots. These rumours later proved false. Further Admiralty requirements called for a longer endurance and more powerful radio equipment than the E class submarines then operating, to enable the new class to operate in concert with the Grand Fleet.

The new J-Boats owed much to the experience gained with the experimental diesel driven ocean going submarine HMS *NAUTILUS*, which, however, never became operational. *NAUTILUS* was fitted with two 1,200hp diesels, 12 cylinder variants of the successful 8 cylinder 800hp diesels fitted to the E class. *NAUTILUS* had many teething problems but much valuable knowledge and experience was gained. The J class were nearly 100 feet longer than the E class and displaced twice as much. They were fitted with three each of the new 12 cylinder diesels, working on three screws and providing 3,600hp for a speed of 19½ knots when on the surface. When the first J-Boat was delivered in 1916 they were the fastest submarines then in existence. J7, the last of the class to be delivered, had a slightly different appearance to her sisters in that her conning tower was set further aft.

As each new submarine was commissioned she was assigned to the 11th Submarine Flotilla at Blyth, England, and the Flotilla was brought under the direct control of the C-in-C of the Grand Fleet, Admiral Jellicoe. Admiralty expectations of the new Fleet Submarines were high

and the best and most experienced submarine commanders were recalled from the Baltic and the Dardanelles to captain them.

Martin Nasmith, VC, commanded J1, Courtney Boyle, VC commanded J5. The legendary Max Horton commanded J6 and other renowned officers either joined or replaced them, including Warburton, Noel Laurence, Goodhart and Ramsey. All these men, however, achieved fame while operating in the traditional submarine role alone, not hamstrung by the need to act as an intricate part of a large organised unit. In addition the J-Boats were said to be mechanically unreliable. Before long the 11th Flotilla ceased to be part of the Fleet and reverted to day to day submarine patrol work. Here they achieved some measure of success against their opponents on the other side of the North Sea³.

On the 3rd November 1916 the German U-boat U30 was on her way back to base when suddenly, off the coast of Norway, both her diesel engines broke down. U20, of U-Flotilla III, the submarine which sunk RMS *LUSITANIA*, was also returning home under command of Kapitän-Leutnant Walther Schwieger and hurried to the assistance of U30. By 10pm on November 3rd they were making for Bovobjerg, Jutland, where they would be met by tugs. At about 7pm on November 4th a fog came up and at 8.20pm both boats ran aground. Apparently they had reckoned themselves more to the west than they actually were. After two hours U30 successfully worked clear but U20 remained hard aground. The High Sea Fleet Commander, Vice Admiral Scheer, immediately dispatched the Fourth Torpedo boat Half Flotilla under Korvetten Kapitän Dithmar to the scene, covered by battle-cruisers and part of the III Battle-squadron. The torpedo boats reached the stranded U-boat at 7.20am on November 5th but a strong swell was running from the south-west and three attempts to refloat U20 were unsuccessful. In spite of all efforts and the favourable high tide, she would not budge. Later, after her crew were taken off, U20 was blown up.

Lieutenant-Commander Noel Laurence had been cruising in J1 off Horns Reef when intercepted German radio signals revealed the U-boat's plight to the British. J1 hurried to the scene and about 1pm on the 5th November he sighted the four battleships of Squadron III at a range of about 4,000 yards. Due to the heavy swell depth keeping was difficult but Laurence did not hesitate to take J1 into the attack. At one point J1 actually broke surface but due to the heavy seas she was not sighted from the German vessels. Laurence drove for the bottom at full power but at that moment the battleships came into his sights. It was now or never and Laurence fired all four bow tubes with a spread angle of five degrees. At 1.05pm SMS *GROSSER KURFÜRST* and immediately afterwards SMS *KRONPRINZ* were each struck by an 18 inch torpedo as they were executing a turn. Due to the heavy seas the torpedoes were not sighted until it was impossible to escape.

GROSSER KURFÜRST was hit far aft beneath her armoured belt and her port helm rendered useless. Her hull was only slightly damaged but due to steering difficulties she had to fall out of line. A short time later she rejoined the squadron at a speed of nineteen knots.

KRONPRINZ was struck below her belt underneath the bridge and a fairly large hole torn in her side. Because of the protection afforded by her torpedo bulkhead, though, damage was confined to her bunkers and gangway and she held her place in line steaming at seventeen knots. This was no mean achievement by Laurence and was the only occasion during the war a submarine torpedoed two capital ships in a single attack. The Kaiser initially rebuked Admiral Scheer for exposing a Battle Squadron to rescue two U-boats, but later that month when they met at Pless to discuss the U-boat campaign, the Kaiser agreed with Scheer that every step possible must be taken to maintain the initiatives gained in the naval war.

On the 12th June 1917, Kapitän-Leutnant Eitester took his U99, of U-Flotilla II, out of Heligoland bound for the waters between the Shetlands and Norway. On July 6th U99 encountered a convoy about 70 miles east of Pentland Firth. Eitester attacked and managed to torpedo and sink one of the escorting destroyers, HMS *ITCHEN*, of the River class. The next morning U99 was running on the surface some 115 miles to the east of the scene when

³Naval History Association of Australia. Website: <https://www.navyhistory.org.au/>

she was sighted by the submarine J2 at a range of some 5,000 yards. J2 launched four torpedoes from her bow tubes at the U-boat and a short time later an explosion was heard. No trace, however, was found of the missing U-boat.

In April 1918 Admiral Scheer took the High Sea Fleet to sea to attack one of the Scandinavian convoys then running between Lerwick and Bergen in the hope of bringing an isolated British, or perhaps even American, Battle-squadron to action. As they proceeded through the German Bight in heavy mists on the morning of the 23rd they were sighted by J6.

Lieutenant-Commander Warburton, her commander, was unsure as to the identity of the German vessels and apparently, for reasons unknown, presumed them British. He made no attack but worse still he inexplicably failed to radio a report of what he had seen to the Admiralty. Scheer continued north as far as the latitude of Bergen without further detection. Had J6 correctly identified the Germans not only may she have torpedoed one of them but there also may have occurred another full scale sea battle in the North Sea. It was a fantastic opportunity missed. J4 was also patrolling the German Bight but sighted nothing at all.

On October 15th 1918 J6 was running surfaced and approached a merchant vessel. The vessel, however, was the British 'Q Ship' *CYMRIC* and moreover she had mistaken J6 for a U-boat. At a later court of inquiry the Cymric's Captain explained that something hanging down the side of J6's conning tower made her letter 'J' look like a 'U', and so believing they had 'U6' cornered the 'Q Ship' opened fire. The hapless crew of J6 waved a large white table cloth from the after-hatch and from her conning tower a Morse lamp flashed 'help . . . help', but the misdirected fire did not slacken and more than a dozen holes were rent in the hull of J6. Only after the submarine drifted off into the mist in sinking condition was the order to cease fire given. Only fifteen of the crew of thirty-four were rescued by Cymric and only then was the tragic mistake realised⁴.

3.3 Heritage Listings

All 6 submarines are listed on the Victorian Heritage Register as shipwrecks. The following table shows the VHR number for each boat:

Vessel Number	VHR Listing Number
J1	S356
J2	S382
J3	S383
J4	S355
J5	S385
J7	S384

⁴Naval History Association of Australia. Website: <https://www.navyhistory.org.au/>

4 *Assessment of Significance*

4.1 Historical significance: Refer also to section 3.2 – Historical Notes.

The role of submarines in the history of the Royal Australian Navy (RAN) has contained a number of interesting twists and turns. We purchased two very competent E class submarines from Britain before the First World War. Although both of these boats were lost early in the war they established a place in the RAN for submarines.

The J class boats were acquired during peacetime, were poorly supported in terms of funding to maintain them properly and were abandoned relatively early in their lives. The J class boats never really had a chance to demonstrate their capabilities before they were scrapped.

Australia made a further attempt to obtain submarines shortly after the demise of the J class boats. The RAN purchased two Odin class long range patrol submarines which were launched in September 1926 by Vickers at Barrow. They were named HMAS *Oxley* and HMAS *Otway*. After arrival in Australia they were in use for only five years before being transferred back to the Royal Navy due to the poor economic conditions in Australia at the time of the Great Depression.

After that experience it was a further 38 years before Australia purchased submarines again. Extraordinarily this period included the Second World War during which the use of submarines in the Pacific War proved to be crucial. Australia had to depend on the United States, Britain and to a small extent the Royal Netherlands Navies for submarine operation. By good fortune the Americans (in particular) became masters of the art of submarine warfare during the Pacific War and the long range, durable and reliable American submarines reaped havoc with Japanese shipping.

After that experience Australia did 'get' the importance of submarines as a part of its naval power. In the late 1960s Australia purchased six Oberon class submarines which operated for 32 years. These boats were reliable and competent although they operated during a period of limited war operations.

Then we took the 'big plunge' and decided to build our own submarines to replace the Oberons. The Collins class were successful, extremely competent and demonstrated, amongst their peers in the submarine community that they were the most capable conventional submarines anywhere and on occasions 'sank' nuclear attack submarines of the US Navy in war games. The Collins boats were, through their lives, subject to unfair vitriolic and unpatriotic attack by the media and some politicians. The Collins class boats remain in service and already plans are in place to replace them with a new class of 'imported' submarines, this time from France.

Time will tell if this was a good decision. The good news is that this time there was little outcry of 'why do we need submarines?' in the press or amongst politicians. That is good news for the RAN as Australia clearly needs a submarine fleet to assist surface and air resources to protect the extensive sea lanes which are Australia's lifelines.

The J class was an important step along the way of creating a permanent submarine capability in Australia. We should not forget them as newer submarines and submariners get on with the job of invisibly and relentlessly patrolling our sea lanes.

4.2 Historic Individuals or Association:

The researching of historic individuals involved in the design and construction of the J class submarines has proven to be very frustrating. No names which would enable researching in this area have been discovered. During operations with the Royal Navy the names of some captains have merged and these include some of the most legendary submarine captains of the First and Second World War eras of the Royal Navy.

After the boats were transferred to Australia, again, there is little information about who was involved in the manning, engineering and managing the boats.

Nevertheless Appendix 3 contains three relevant biographies and biographical information on six dockyards and naval operational facilities as follows:

- Martin Dunbar-Nasmith
- Edward Courtney Boyle
- Sir Max Kennedy Horton
- Pembroke Dockyard
- Portsmouth Dockyard
- Devonport Dockyard
- HMAS Platypus, Sydney Harbour
- Osborne House, Geelong Submarine Headquarters
- Sandringham Yacht Club

4.3 Creative or Technical Achievement:

'Beginning in ancient times, humans sought to operate under the water. From simple submersibles to nuclear-powered underwater behemoths humans have searched for a means to remain safely underwater to gain the advantage in warfare, resulting in the development of the submarine. It was first built in 1620'⁵.

The turn of century marked a pivotal time in the development of submarines, with a number of important technologies making their debut, as well as the widespread adoption and fielding of submarines by a number of nations. Diesel electric propulsion would become the dominant power system and instruments such as the periscope would become standardized. Batteries were used for running underwater and gasoline (petrol) or diesel engines were used on the surface and to recharge the batteries. Early boats used gasoline, but quickly gave way to kerosene, then diesel, because of reduced flammability. Effective tactics and

⁵ Wikipedia. History of Submarines. https://en.wikipedia.org/wiki/History_of_submarines Last updated 15 April 2018.

weaponry were refined in the early part of the century, and the submarine would have a large impact on 20th century warfare.

The Irish inventor John Philip Holland built a model submarine in 1876 and a full scale one in 1878, followed by a number of unsuccessful ones. In 1896, he designed the Holland Type VI submarine. This vessel made use of internal combustion engine power on the surface and electric battery power for submerged operations. Launched on 17 May 1897 at Navy Lt. Lewis Nixon's Crescent Shipyard in Elizabeth, New Jersey, the Holland VI was purchased by the United States Navy on 11 April 1900, becoming the United States Navy's first commissioned submarine and renamed USS *Holland*.⁶

By the end of the First World War, when the J class boats were built, the general form of the modern conventional⁷ submarine had emerged. Over the decades of the 20th century conventional; submarines became larger, faster and enormous strides were made in sensors, sonar, weapons systems and the comfort of crews. Each generation of submarines contain new technologies and development of older ones.

The J class boats represent the first 20 years of development between USS Holland and the Collins class boats. Nevertheless if you stood in the control room of either a J class or a Collins class boat you would see similar features which would very clearly tell you that you are in a naval submarine of the 20th century.

4.4 Research Potential:

Because there are no surviving J class submarines in restored condition we are left to interpret the records of their era and the deteriorating fabric of the wrecks which remain.

The four wrecks scuttled off Port Phillip Heads are detailed below. These wrecks can be accessed by experienced divers:

- 'J1 was sold to the Melbourne Salvage Company on 26 February 1924. The hulk was scuttled in the ship graveyard off Port Phillip Heads at 38° 18'58" S 144°33'13" E on 26 May 1926. The J1 wreck, also known as "38 Metre Sub", "135 Foot Sub", or "New Sub", is submerged in 38 metres (125 ft) of water, and is accessible by experienced divers'.⁸
- 'She [J2] was scuttled in the ship graveyard off Port Phillip Heads at: 38°18'49" S, 144°34'48" E coordinates.

The J2 wreck, also known as "39 Metre Sub", "130 Foot Sub", "Broken Sub" or "Deep Sub", is submerged in 39 metres (128 ft) of water. The wreck lies on its keel running North-South with its bow pointing out to sea. During its scuttling the bow section broke off, exposing the forward torpedoes tubes and bow modifications. The wreck is accessible by experienced divers, but it is the deepest and most difficult of the four J class submarine wrecks in the area'.⁹

⁶Wikipedia. History of Submarines. https://en.wikipedia.org/wiki/History_of_submarines Last updated 15 April 2018.

⁷Conventional here means non-nuclear powered i.e. diesel-electric powered.

⁸Wikipedia. HMS J1. https://en.wikipedia.org/wiki/HMS_J1 Last updated 1 April 2018.

⁹Wikipedia. HMS J2. https://en.wikipedia.org/wiki/HMS_J2 Last updated 1 April 2018.

- 'J4 was sold on 26 February 1924, but sank at her moorings at Williamstown, Victoria on 10 July 1924. She was raised and scuttled in ship graveyard off Port Phillip Heads.

The J4 wreck, also known as the "Shallow" or "90 foot Submarine", is submerged in 27 metres (89 ft) of water in the ship graveyard and is a popular dive site'.¹⁰

- 'The J5 was located lying upright fully intact in 36 metres (120 feet) by the Geelong Skindivers Club on 4 May 1974. It was the second of the J Class submarines discovered by the club.

The wreck is covered in yellow zoanthids, sponges and ascidians and usually supports large schools of fish such as splendid perch'.¹¹ The wreck was further inspected by Terry Arnett and Jim Anderson on 29 August 1974. Inspection conformed that the vessel was J5.¹²

The wrecks of J3 (Swan Island) and J7 (Sandringham Yacht Club) can be accessed with the permission of the owners.

Apart from searching the wrecks there are a few remaining artefacts from the J class boats scattered around.

Tim Smith of the NSW Heritage Office did quite a lot of work on the J class submarines when he was working in Heritage Victoria until recently. He has drawings of the boats and has taken 3D photography of J3 at Swan Island.

Apart from the above research/potential research the following elements would be helpful in the opinion of this author:

- Search for more historic photographs of the interior spaces of the J class boats.
- Search for operational records such as log books of the boats.
- Search for more details of the status of the wreck of J6 in the North Sea.
- Search for information on the service records of the J class boats whilst in Royal Navy service.
- Search for records kept privately crew members, by the families of crew members with particular emphasis on any records made by sons of crew members who would have been most interested in the workings of submarines.

4.5 Social:

The social record of these boats will be limited due to their service in the Royal Navy being during hostilities and therefore secret whilst the history of the boats in Australian service was short and intermittent. The main social record will now be primarily limited to the relatives, and friends of the crew members both during Royal Navy and RAN service.

¹⁰Wikipedia. HMS J4. https://en.wikipedia.org/wiki/HMS_J4 Last updated 1 April 2018.

¹¹50 Great Dives web site. <http://50greatdives.com/listing/j5-submarine>.

¹²Wikipedia. HMS J5. https://en.wikipedia.org/wiki/HMS_J5 Last updated 1 April 2018.

4.6 Rarity:

Only 7 J class boats were built and the fate of all of them is known, including their current locations. The rarity of the remains will increase as the wrecks deteriorate further. Relics of the class are currently not rare however no restored or maintained examples of the class have been retained.

Some submarines of other classes exist in museums including two Oberon class submarines in Australia at the Maritime Museums in Fremantle and Sydney. Although these submarines are much later in design and construction they give a vivid representation of the interior and exterior of typical 20th century diesel-electric submarines.

4.7 Representativeness:

Although the remaining relics of all the J class submarines are now highly deteriorated there are other submarines of approximately similar vintage which will be representative of submarine design and construction towards the end of World War One. Submarine design has evolved systematically and incrementally during the 20th century so that changes from one class to another were generally not radical.

4.8 Integrity/Intactness:

No J class submarine can be considered intact as they are either wrecks on the sea bed subject to decades of deterioration or have been used as breakwaters and are, if anything, even more deteriorated due to inter-tidal corrosion over many decades.

Integrity is more difficult to judge as the boats were subject to 'stripping' of useful or dangerous components prior to scuttling or being sunk as breakwaters. Divers report that there is still a lot of equipment on board the scuttled boats.

4.9 Statement of Significance:

In the early 1920s Australia was gifted six J class submarines from the Royal Navy. These were the latest and largest submarines built by the RN for service in World War I. They were competent but were in service with the Royal Navy for only a short time before the end of the war.

Once in Australia they were placed into service but there was little appetite for submarines or in fact any other military endeavour in the early 'twenties'. The world was exhausted from long and dirty war followed by an even more devastating Influenza Epidemic. The J class boats were soon retired and sunk as breakwaters or scuttled in the ship disposal area off the mouth of Port Phillip Bay.

The significance of the six remaining J class boats in Australian waters are that they are part of a continuous development of submarines operated by Australia during the 20th century. The sequence of Australian submarines (with a couple of individual exceptions) fall into four classes. The two boat AE1 and AE2 class of World War One; the J class during the 1920s (6 boats); the Oberon class from 1960 to 2000 (6 boats) and the Collins class (6 boats) from

1996 to the present. The wrecks of AE1 and AE2 are now known, the wrecks of the J class are now known; there are two Oberon class boats preserved in as-in-service condition and the six Collins class boats are still in seervice.

As a Sea Power which depends heavily of sea transport for both imported goods and our outgoing trade products Australia has a huge stake in maintaining our sea lanes. The Royal Australian Navy and the Royal Australian Air Force have a range of assets to carry out this task however the submarine of one of the most effective weapons for patrolling maritime sea lanes and, when necessary, taking action to protect them.

For Engineering Heritage Australia the importance of preserving, protecting, recording and publicising the role of submarines in the 20th century growth of Australia is important across all the classes of submarines operated by Australia.

Nominating the J class submarine, the principal relics of which are in Victorian waters, is therefore a priority. The six wreck sites are vulnerable and deteriorating, the story of the J class submarines is not well known to the Australian public and the quest to bring together a full set of documents and records of this class becomes more pressing with each passing year.

Furthermore we are now beyond the life span of almost anyone who ever set foot in the control room of a J class submarine, or who experienced the din of large diesel engines, operating in the cramped engine room of a J class submarine at speed. Even a 10 year old boy in 1925 would now be 103 years old hence oral history is now largely beyond our grasp.

It remains for the present generation to gather together whatever evidence we can about the J class submarine and attempt to make that record as permanent as possible.

The J class submarine may never have fired a shot in anger for Australia but they are part of our long naval history and must be remembered.

4.10 Area of Significance:

As a part of the Royal Australian Navy the J class submarine must be considered to be of national significance as the purpose of obtaining these boats was for the protection of Australia, not just Victoria.

Although the Royal Navy operated the class initially this does not constitute international significance. Whilst the UK and Australia have a bi-lateral interest in the J class, the type displayed no special features which make it significant outside the two countries which operated the boats.

It is therefore recommended that these works be awarded an **Engineering Heritage National Marker**.

5 Interpretation Plan

5.1 General Approach

None of the wrecks of the J class submarines are safely or legally accessible by the general public. The wrecks off Port Phillip Heads are only accessible by experienced scuba divers. The Swan Island breakwater wreck is in a controlled military area and the Sandringham Yacht Club wreck is in the private property of the yacht club.

The group of wrecks must therefore be recognised as Virtual Interpretation sites.

Hence there will be no marker or interpretation panel. Publicity for the sites will be achieved through the EHA online presence and through other forms of publicity and education about the sites.

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7 Acknowledgments, Authorship and General Notes

7.1 Acknowledgments

I would like to acknowledge the great assistance given by Tim Smith previously Executive Director of Heritage Victoria and now with the NSW Heritage Office.

7.2 Nomination Preparation

This nomination was prepared by:

Owen Peake
FRMIT HonFIEAust CPEng
4 Islington Street
Collingwood Victoria 3066

7.3 General Notes

This document has been prepared in accordance with the Commonwealth Government Style Manual for authors, editors and printers, Sixth Edition, revised by Snooks & Co, 2002.

Appendix 1: Images with captions

A1-1 Historical Image



J3 in Australian service. Image: Royal Australian Navy.



J3 in Australian service. Image: Royal Australian Navy.



J4 in the Yarra River at Spotswood. Image: source unknown.



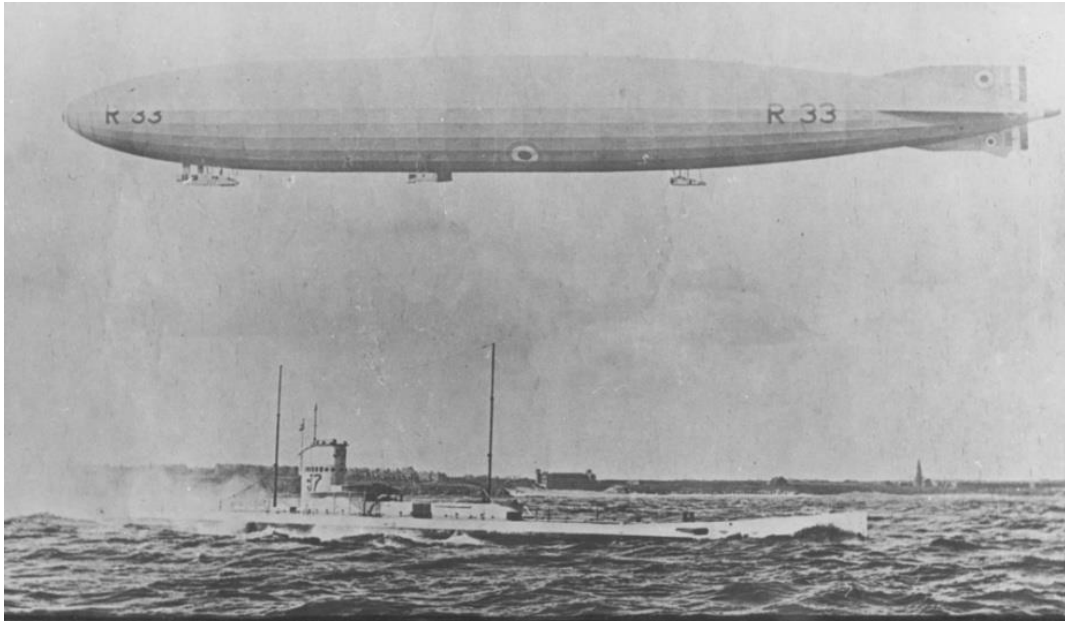
J5 at sea. Image: Australian War Memorial.



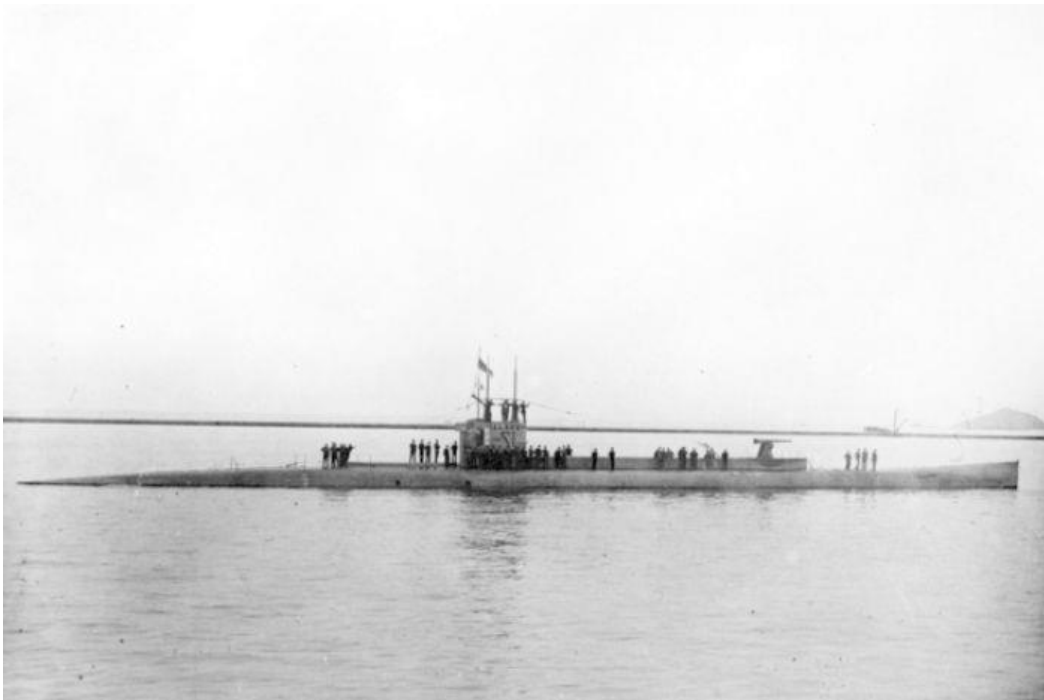
J5 with crew on deck. Image: Submarine Institute.



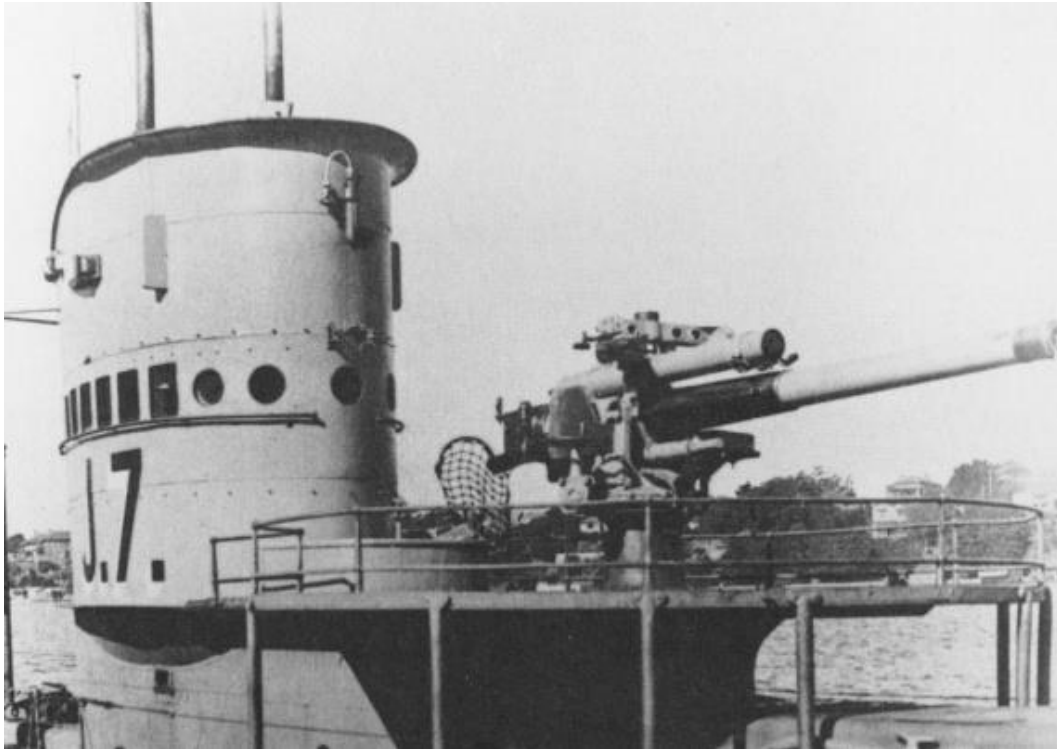
J5 in dry dock. Image: Visual Lightbox.com.



*J7 off the River Tyne in company with airship R33 whilst in Royal Navy service.
Image: source unknown.*



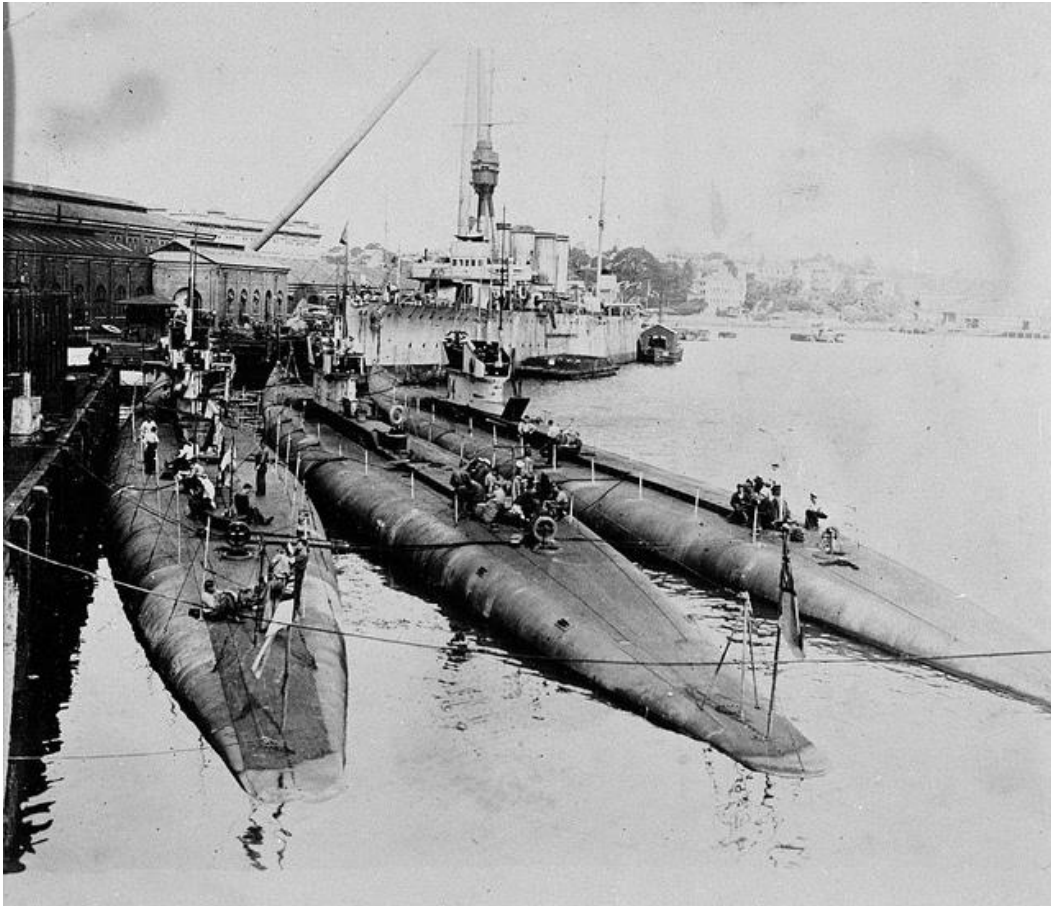
J7 on route to Australia on 25 March 1919. Image: Australian War Memorial.



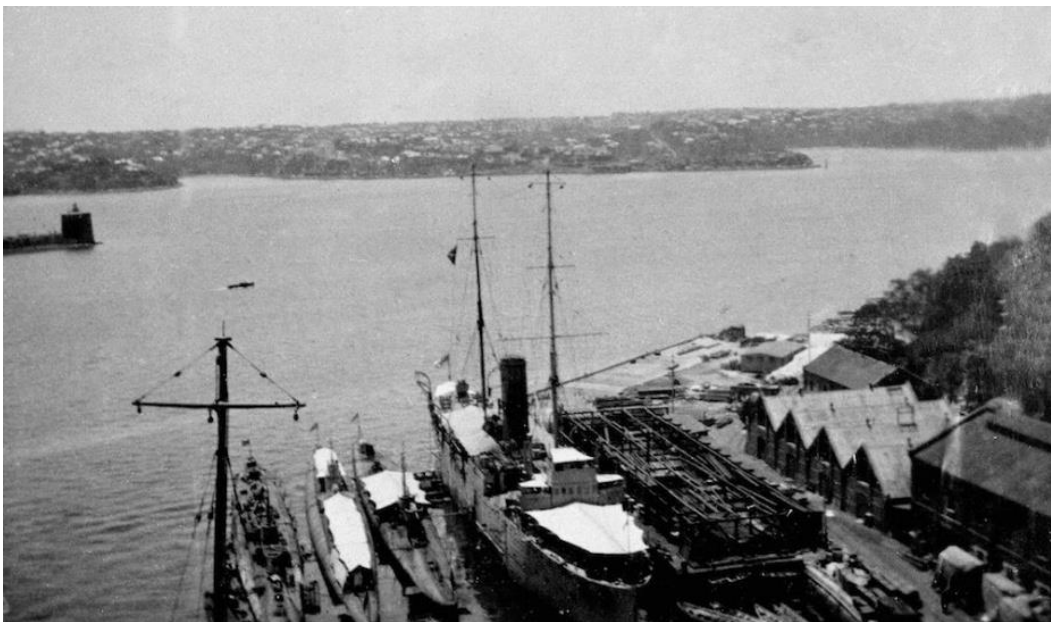
J7 detail showing conning tower and 4 inch deck gun. Image: source unknown.



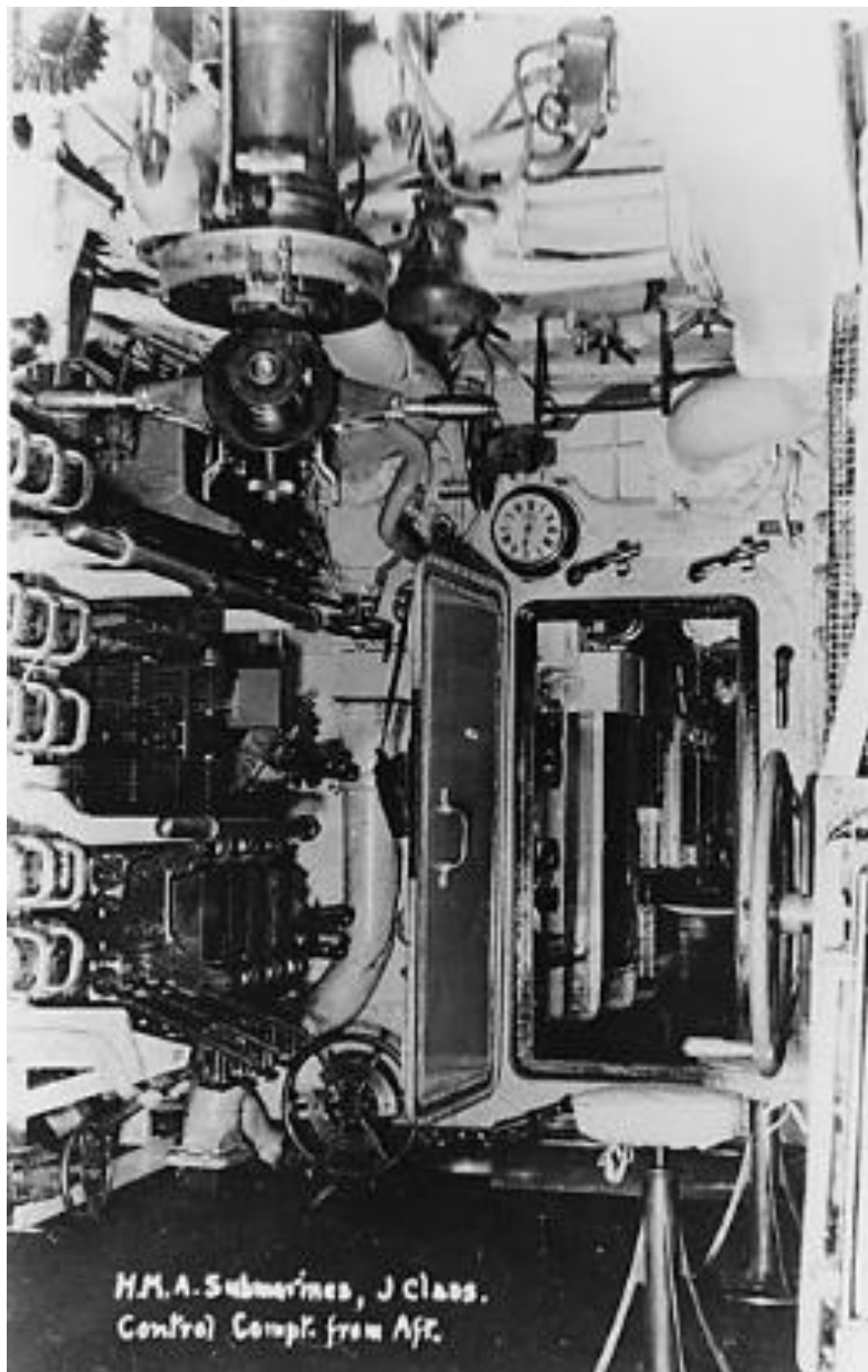
J7 in Royal Navy service. Image: source unknown.



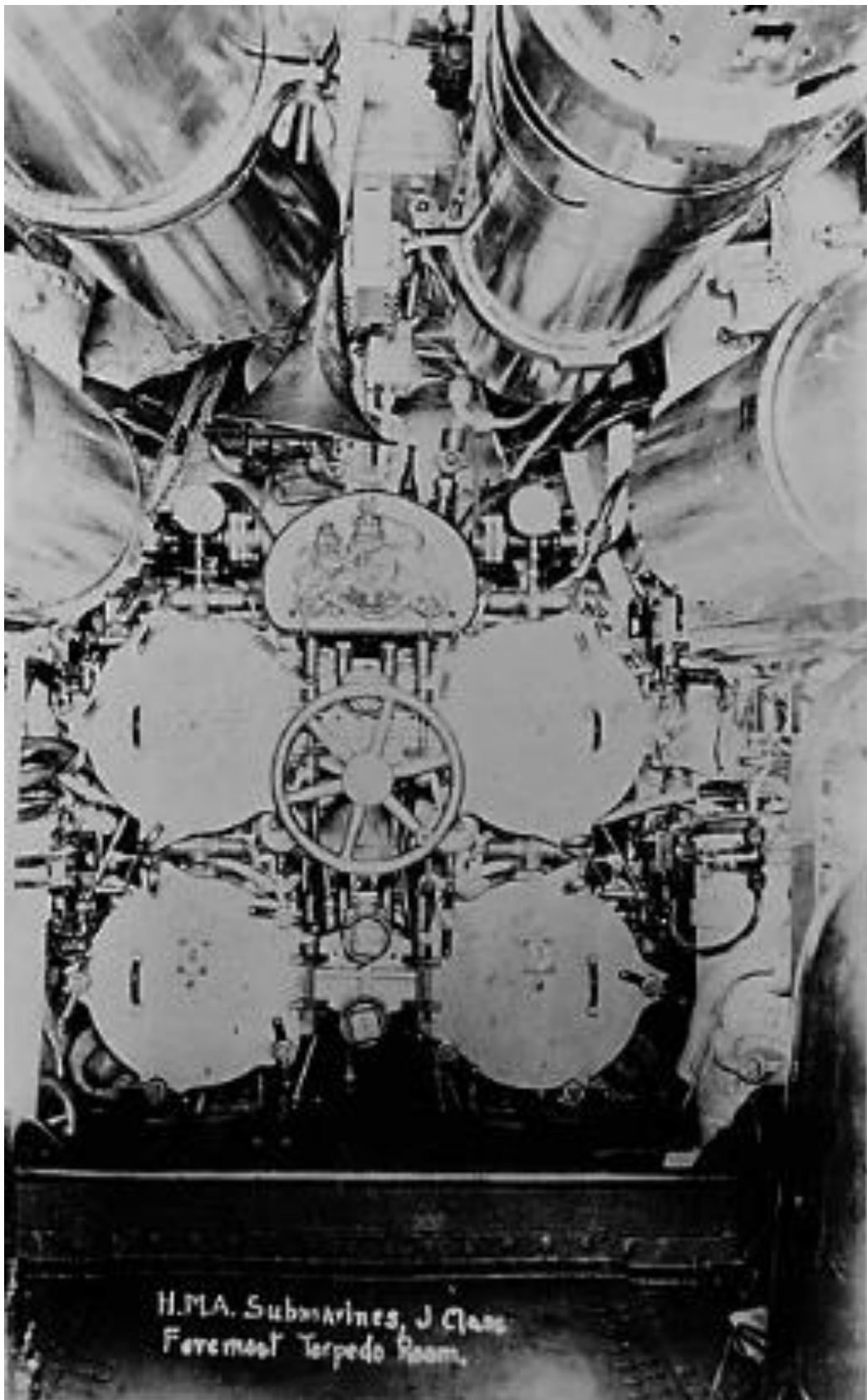
J1, J4 and J5 at Garden Island, Sydney. Image: Naval History Association.



*Three J class submarines at HMAS Platypus, Garden Island, Sydney.
Image: source unknown.*

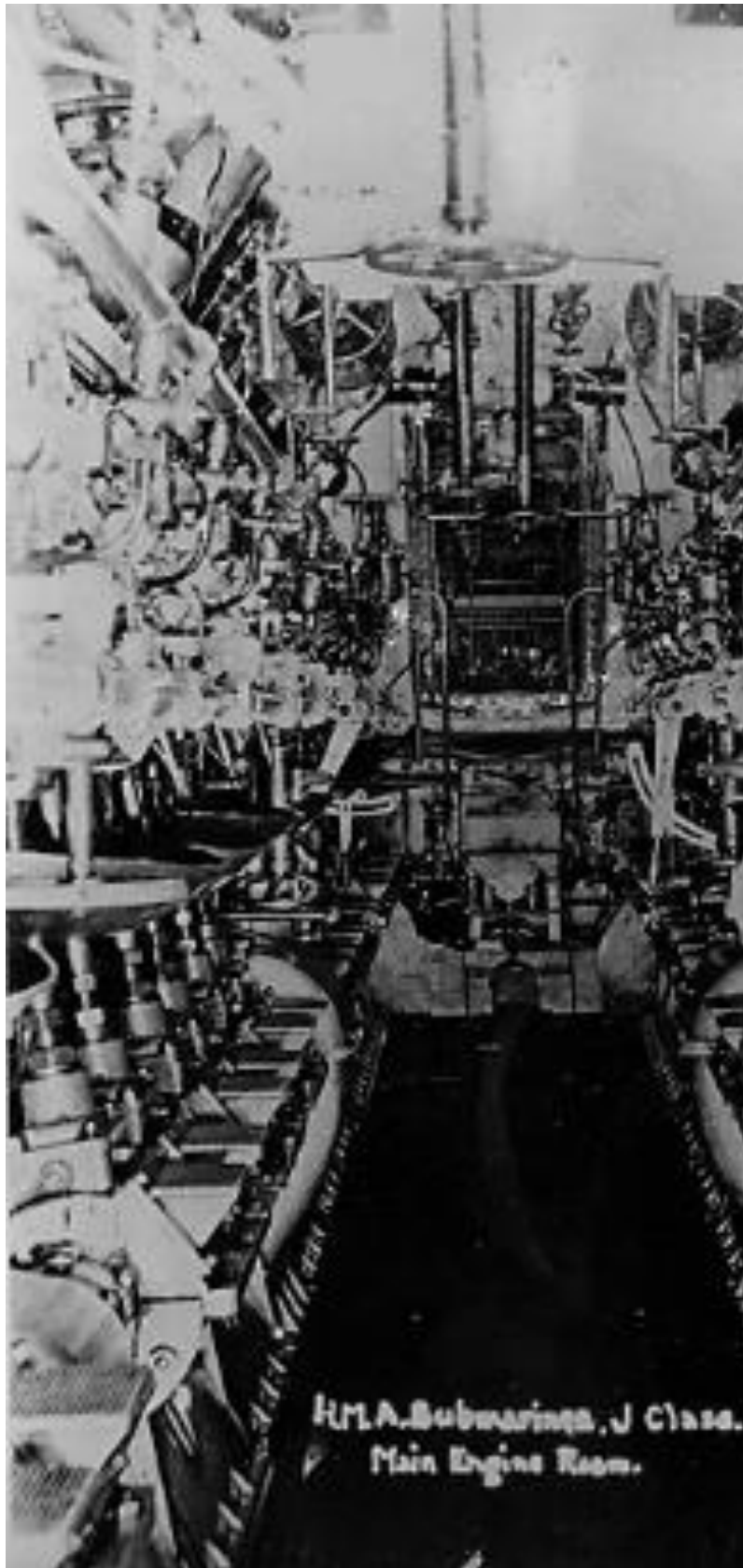


*Main Control Room from aft. Periscope at top.
Image: Maritime Archaeological Association of Victoria (MAAV).*



Forward Torpedo Room with 4 x 18 inch torpedo tubes.

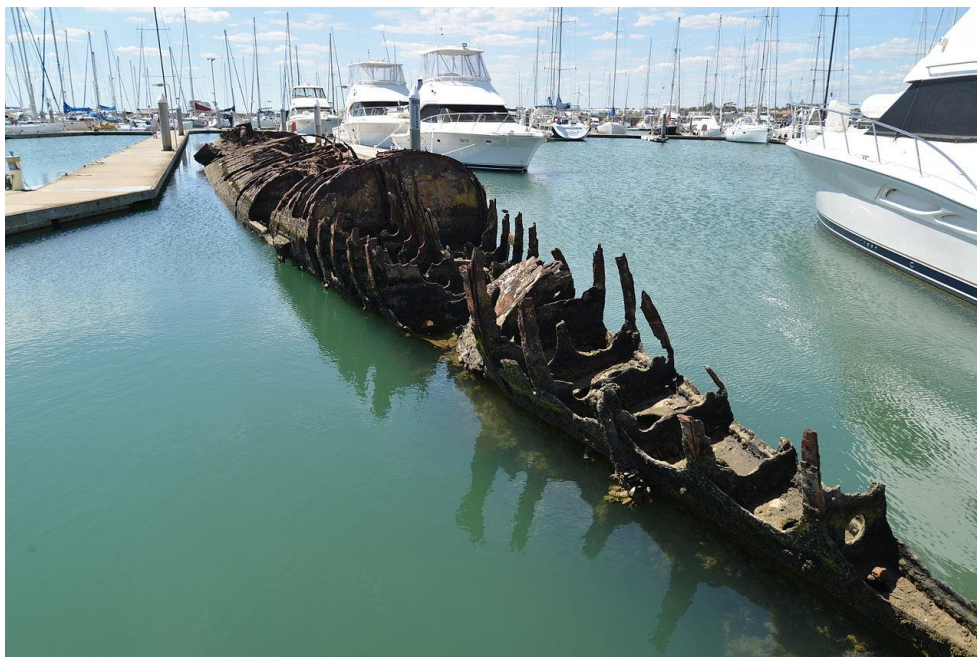
Image: Maritime Archaeological Association of Victoria (MAAV).



Forward Engine Room.

Image: Maritime Archaeological Association of Victoria (MAAV).

A1-2 Recent Images



J7 in the marina at Sandringham Yacht Club. Image: Sandringham Yacht Club.



***Wreck of J3 at Swan Island with warning sign on conning tower.
Image: Royal Australian Navy.***



J5 wreck off Port Phillip Heads. Conning Tower. Image: Victorian Heritage Register.



*J5 wreck off port Phillip Heads. Diver inside Conning Tower.
Image: Victorian Heritage Register.*

Appendix 2: Drawings and detailed Images

The drawings from which the following scrap images have been taken are a set of construction drawings in the possession of Tim Smith.

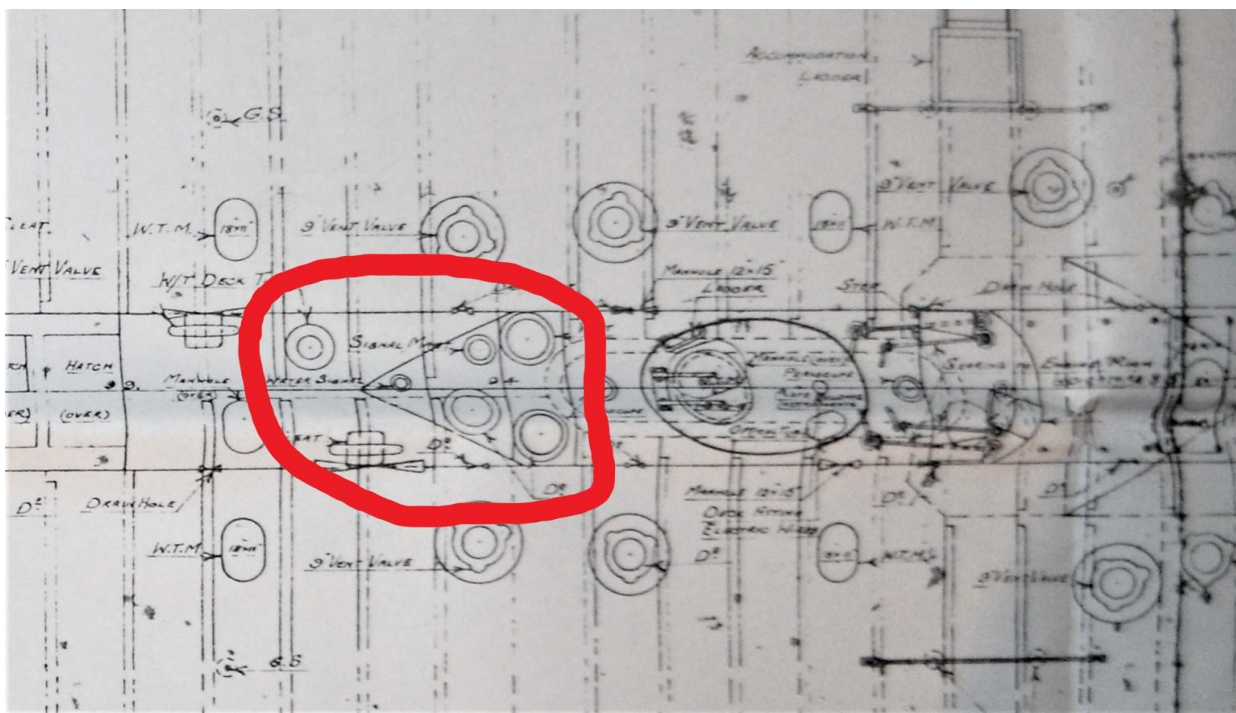
The images in this section are all of J7 at Sandringham Yacht Club, taken in 2016.

Where possible features on the drawings have been lined up with features in the J7 wreck. However it is not possible to see features much below the present water line and it appears that the coming tower was removed before the wreck was sunk at Sandringham.



General view of the deck of the submarine J7 at Sandringham, surrounded by modern pleasure craft. This view is looking towards the stern from about mid-ships.

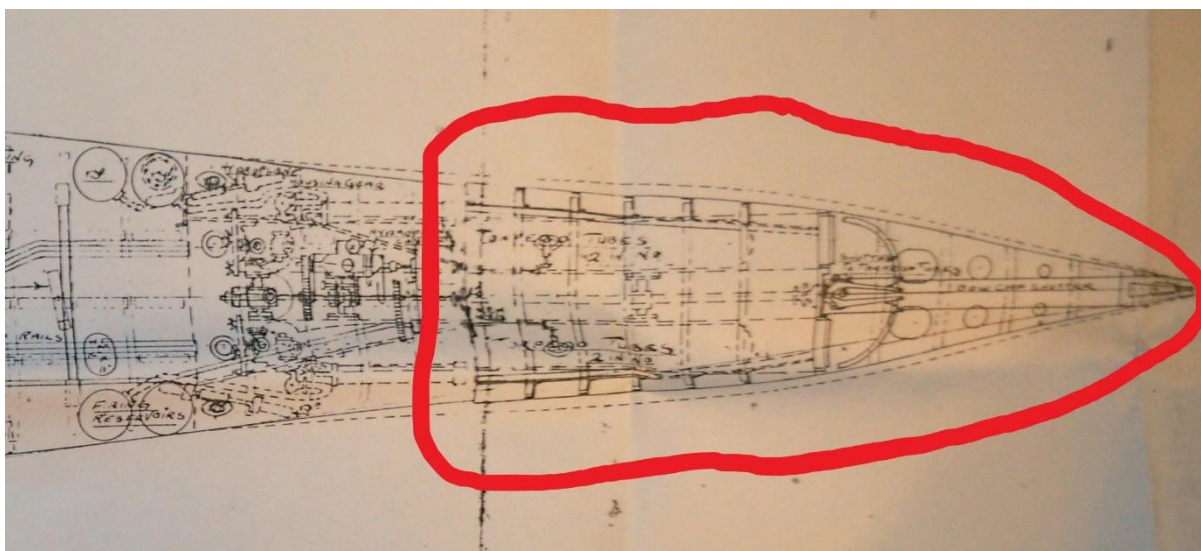
Image: Owen Peake.



Plan view of the deck just aft of the conning tower. The group of pipes circled in red include holes which contained retractable masts carrying antennas and other sensing equipment. The conning tower hatch is located in the large oval shape to the right of the red outline.
Image: Original drawings from Tim Smith.



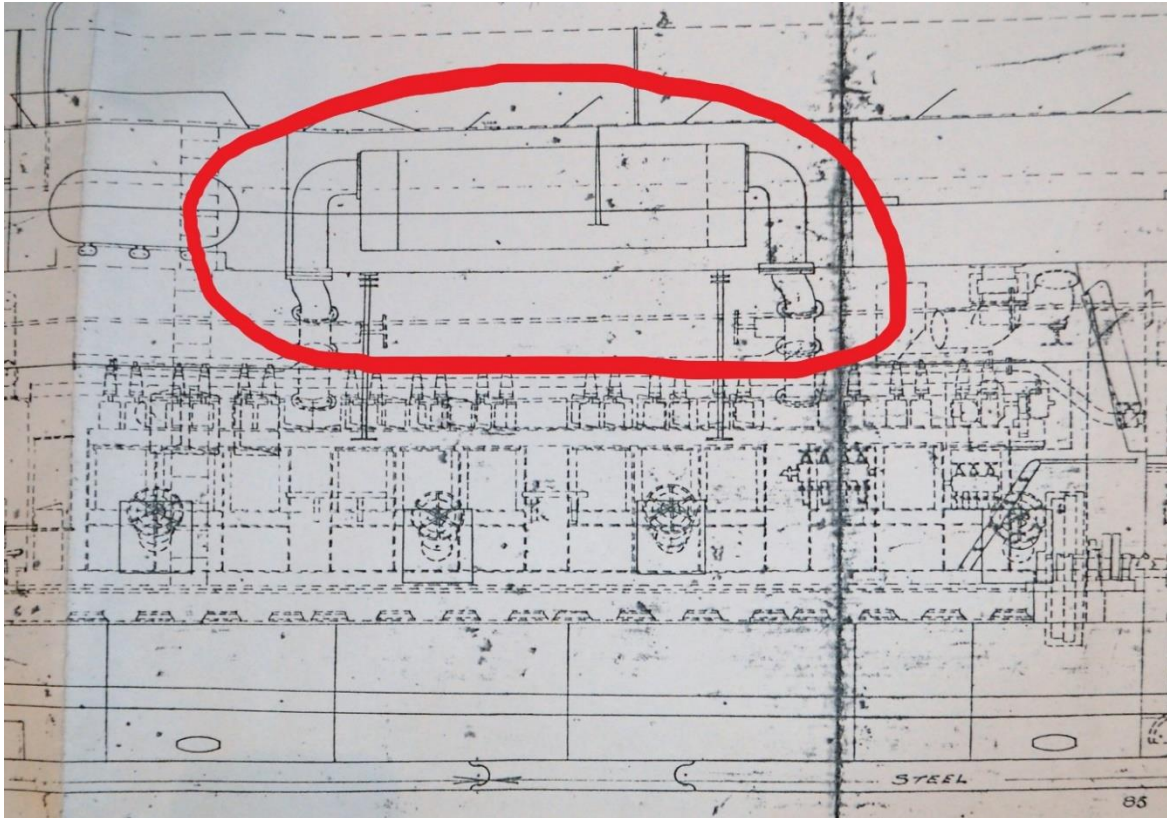
Image of the area within the red outline in the drawing above.
Note the deck cleat, left lower. Image: Owen Peake.



***Plan drawing of the bow of J7.
Image: Original drawings from Tim Smith.***



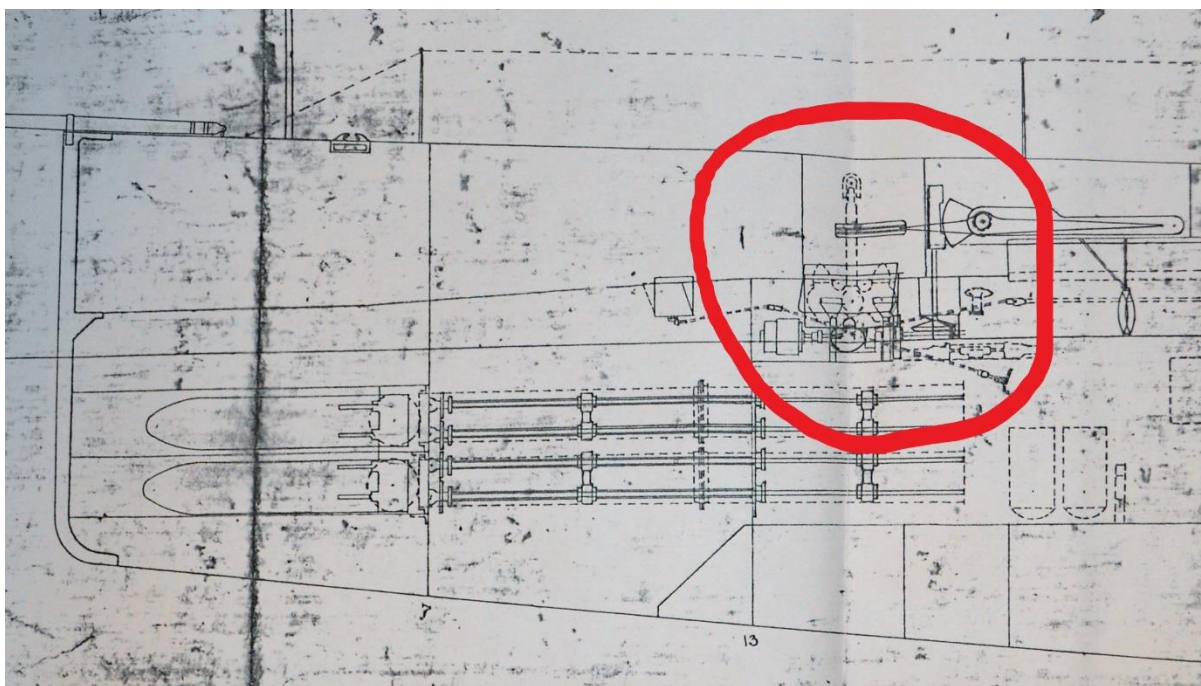
***The skeleton of the bow structure as seen on the wreck of J7. The forward torpedo tubes exit the hull well back in this image and considerably below the present water line.
Image: Owen Peake.***



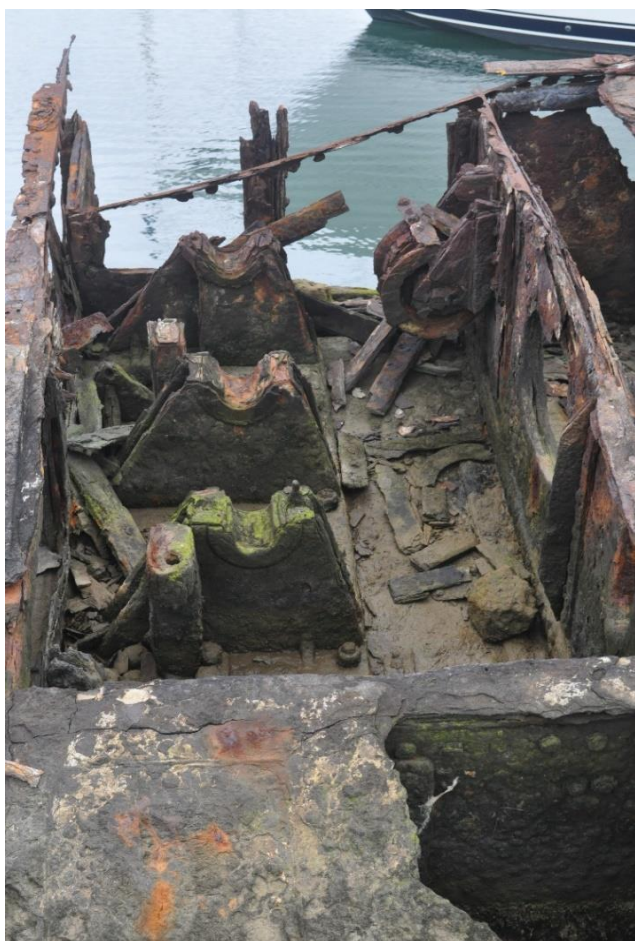
***Elevation from drawing of the J class showing the exhaust tank of one of the diesel engines. The exhaust tank is outside the pressure hull and the valves which isolated the exhaust pipes for diving can be seen just inside the red outline. The dotted outline of the engine can be seen with its 12 cylinders broken into four banks of 3 cylinders each. This may seem like an unusual feature for modern diesel engines but a straight 12 engine of any type is unusual.
Image: Original drawings from Tim Smith.***



Exhaust tank on the deck of J7. Image: Owen Peake.



***Part of elevation drawing showing the anchor winch in the red outline.
Note the forward torpedo tubes also appear in this section of drawing.
Image: Original drawings from Tim Smith.***



***Anchor winch bearings remain
visible on the forward deck of J7.
Image: Owen Peake.***



*Corroded outer hull plating is visible just below the surface in this image of J7.
Image: Owen Peake.*



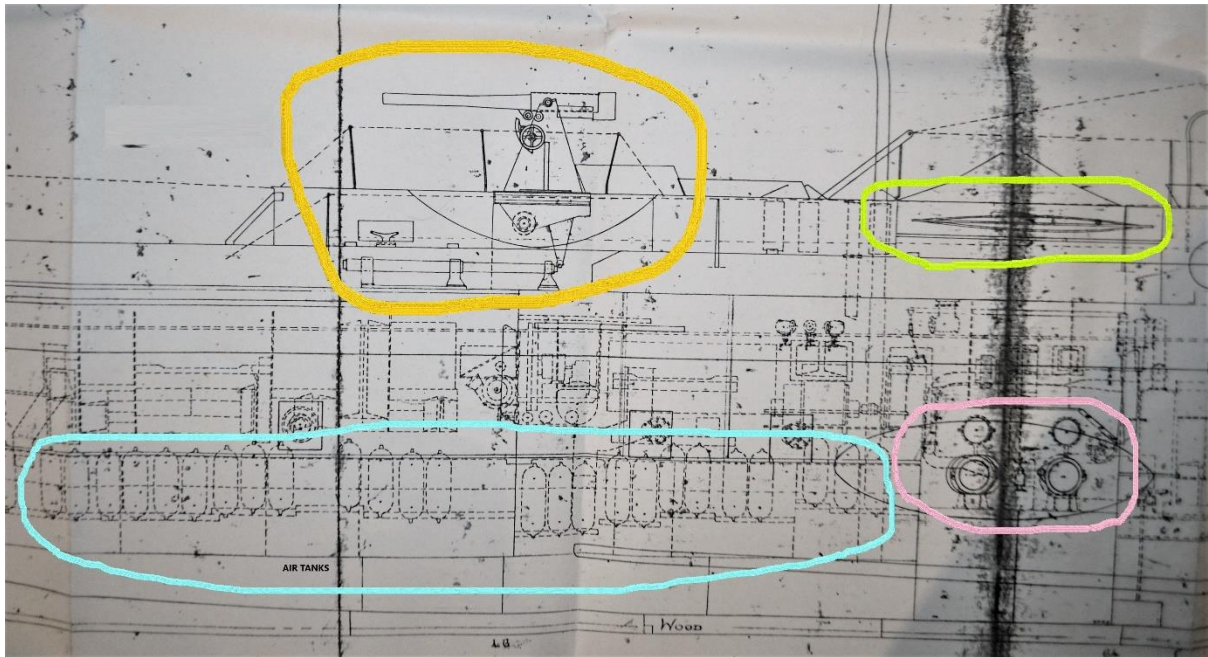
Shattered steel columns in the vicinity of the conning tower suggest that this structure may have been 'blown off' before J7 was sunk at Sandringham. Image: Owen Peake.



The stern section of the hull. The rear hydroplane mounting and stowage was fitted in the lower space to the right of the image. Image: Owen Peake.



The bow post stands well above the water. Image: Owen Peake.



Elevation drawing of hull forward of conning tower. Bow to left.

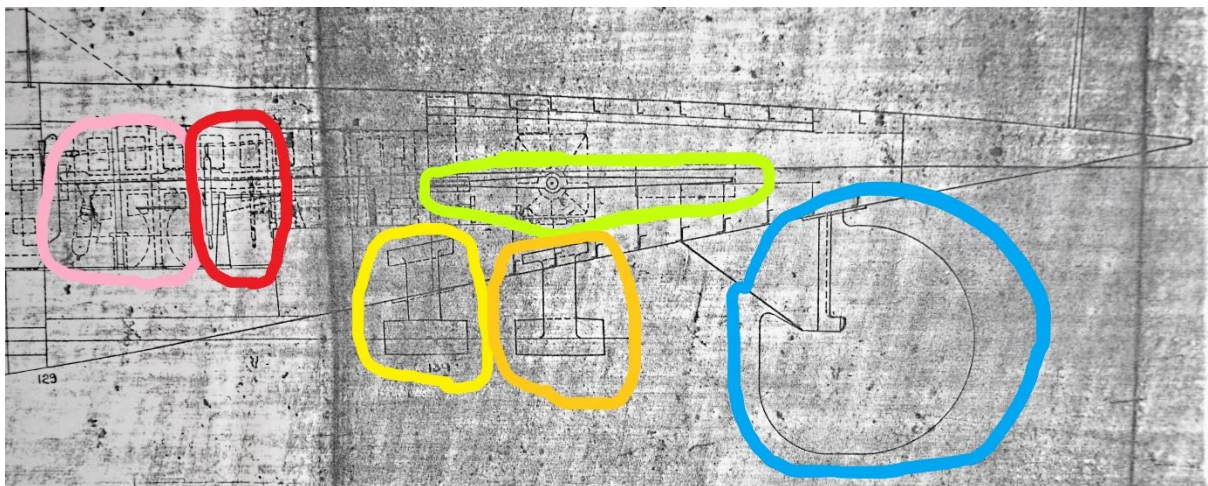
ORANGE: Deck Gun

GREEN: Forward hydroplane

BLUE: Air tanks

PINK: Side –firing torpedo tubes

Image: Original drawings from Tim Smith.



Elevation drawing of rear section of hull.

PINK: Officers ward room

RED: Emergency steering and rear hydroplane station

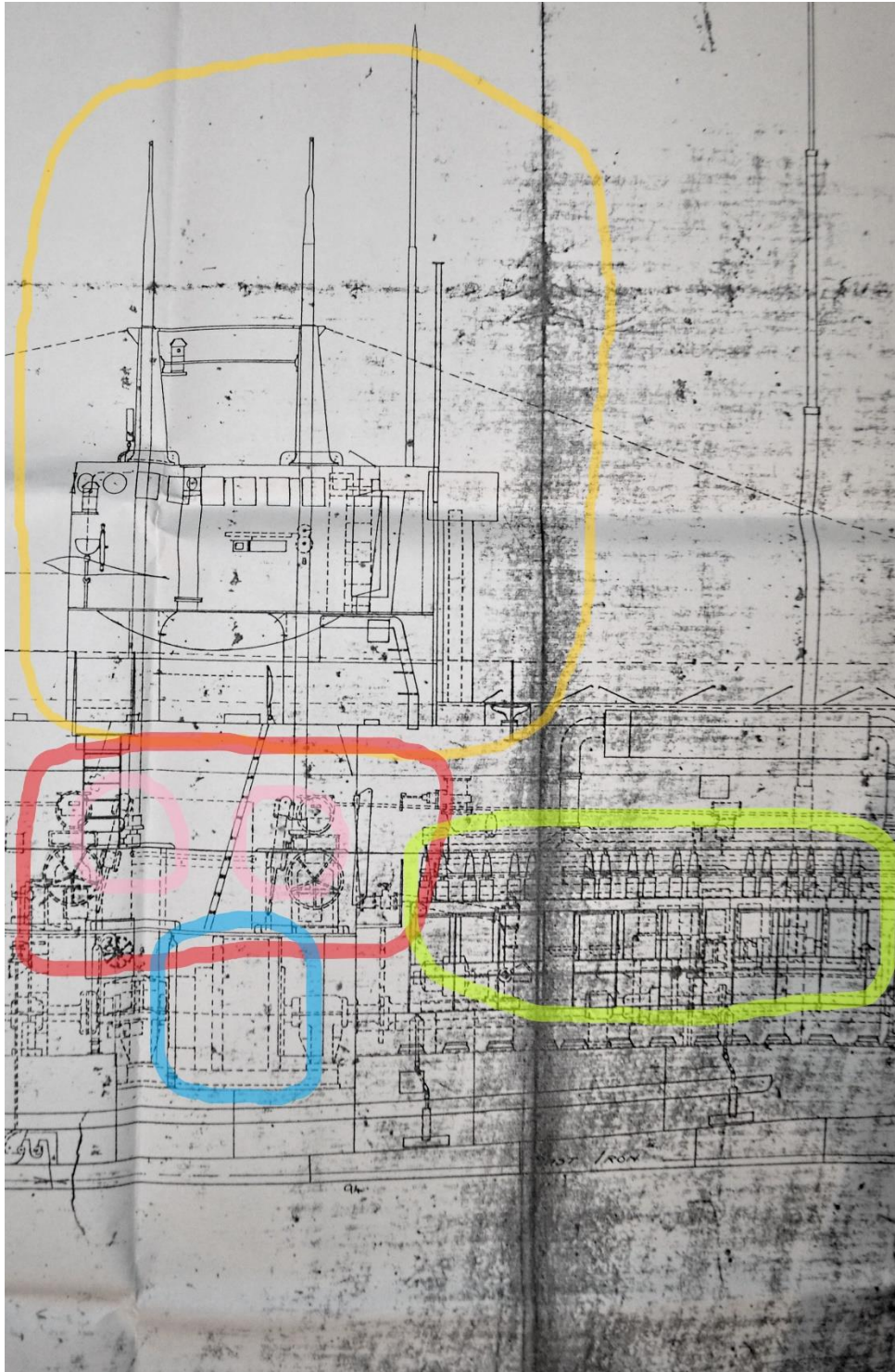
GREEN: Rear hydroplane

YELLOW: Two outside propeller shaft support brackets (propellers not shown)

ORANGE: One centreline propeller shaft support bracket (propeller not shown)

BLUE: Rudder

Image: Original drawings from Tim Smith.



Elevation drawing of conning tower and control room. Bow is to the right.

ORANGE: Conning tower

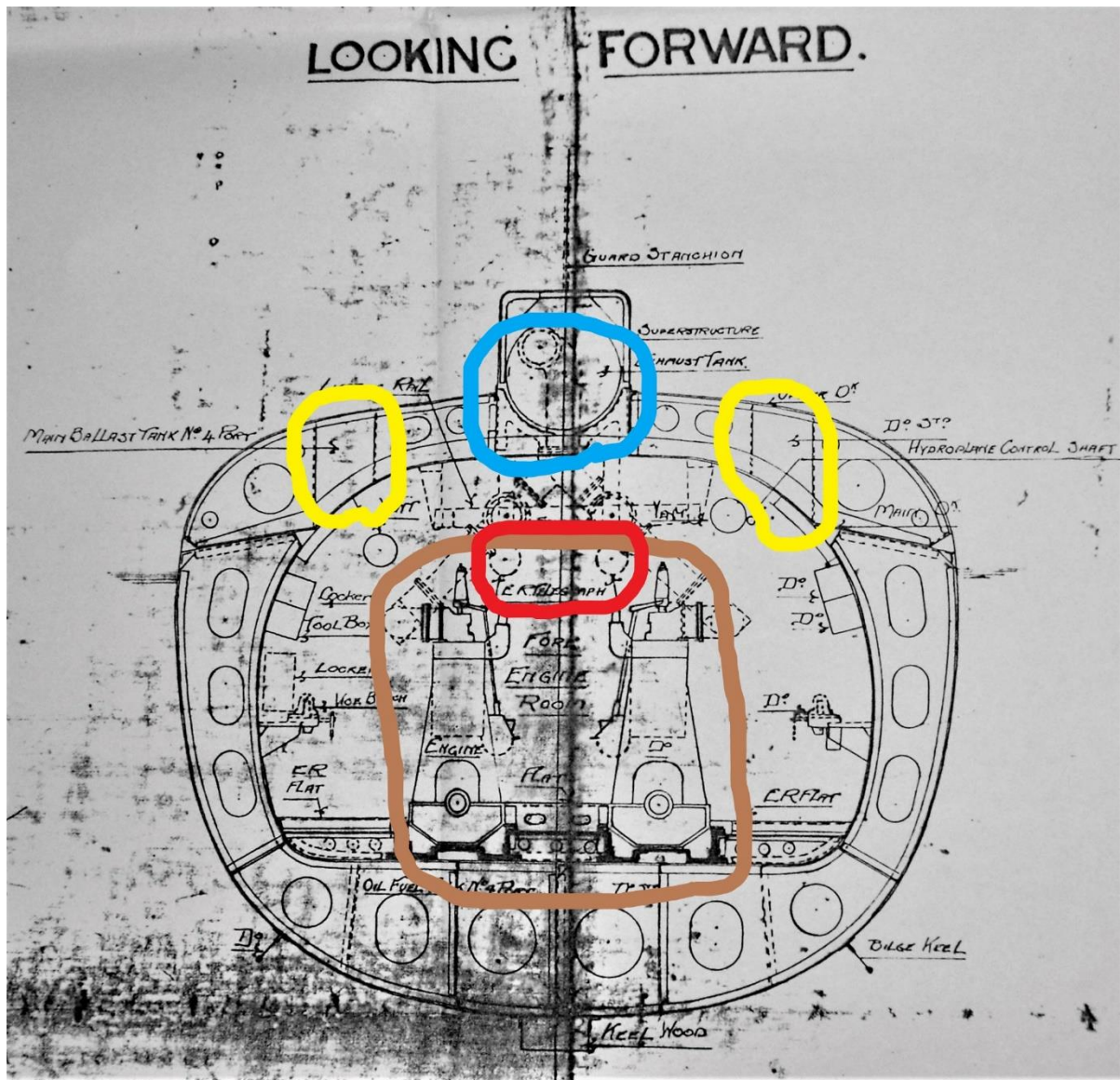
RED: Control Room

PINK: Viewing position for two periscopes

GREEN: Forward diesel engine

BLUE: Generator

Image: Original drawings from Tim Smith.



Cross section drawing of hull through forward engine room which is ahead of the conning tower. This view is looking forward.

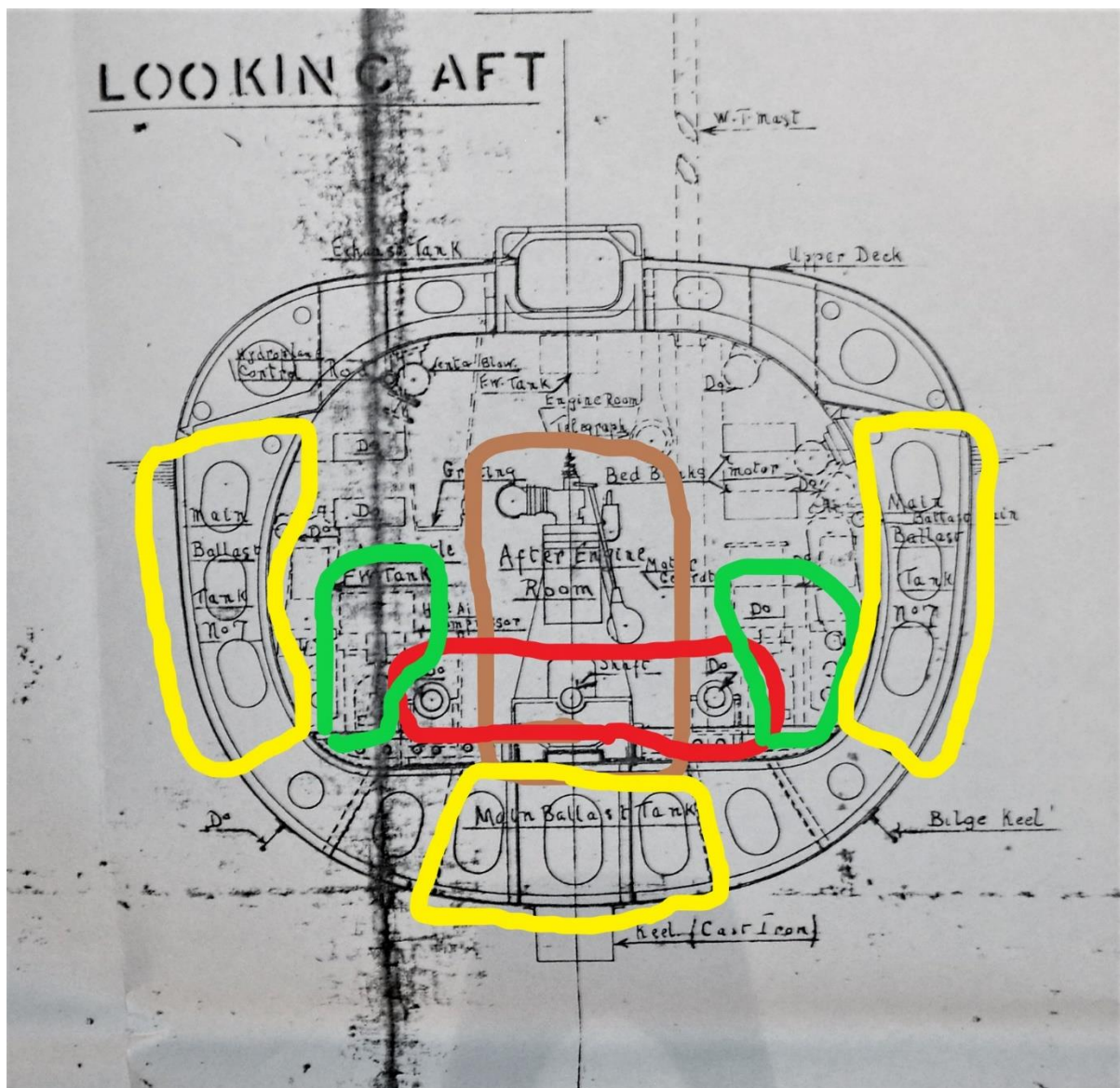
BROWN: Two diesel engines side-by-side

RED: Engine telegraphs

BLUE: Exhaust tank

YELLOW: Main ballast tanks No.4 (port and starboard)

Image: Original drawings from Tim Smith.



Cross section drawing of hull through after engine room which is behind of the conning tower. This view is looking aft.

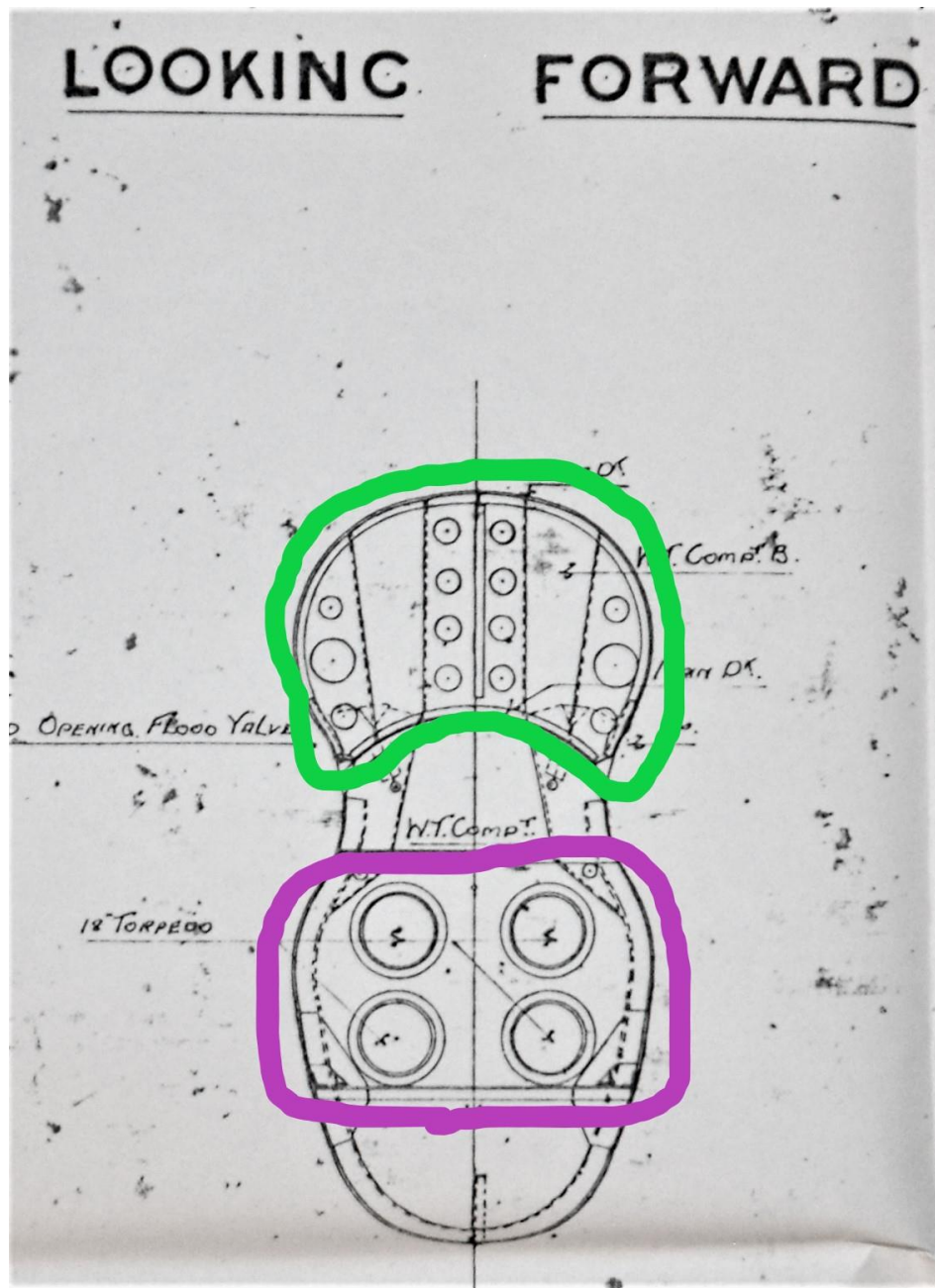
BROWN: Single diesel engine on hull centre line

RED: Three propeller shafts driving three propellers

YELLOW: Main ballast tanks No.7 (port and starboard) and Main Ballast Tank on centre line

GREEN: High pressure air compressors (port and starboard)

Image: Original drawings from Tim Smith.

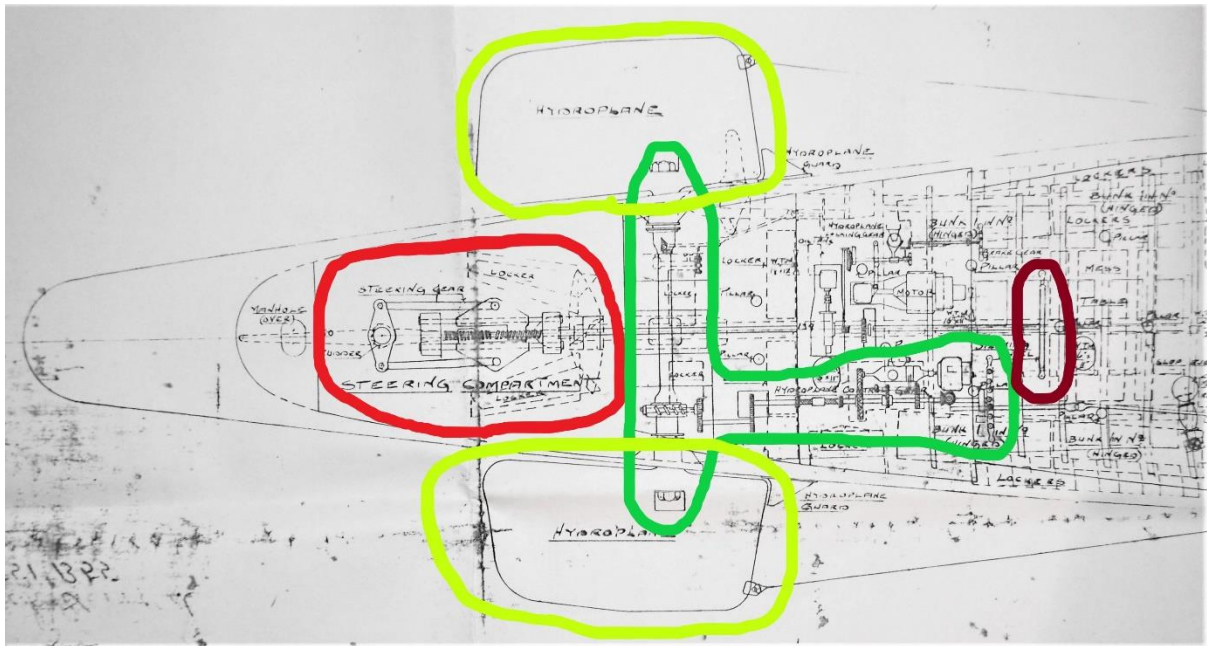


Cross section drawing of hull through forward torpedo room. This view is looking forward.

GREEN: Watertight compartment giving access to bow.

PURPLE: Four torpedo tubes firing forward.

Image: Original drawings from Tim Smith.



Plan drawing of aft compartments.

BROWN: Emergency steering station.

RED: Steering gear.

YELLOW: Aft hydroplanes (port and starboard).

GREEN: Drive mechanism for aft hydroplanes including emergency control position at right.

Image: Original drawings from Tim Smith.

Appendix 3: Historic Individuals or Associations

A3.1 Admiral Sir Martin Dunbar-Nasmith VC KCB KCMG¹³



Martin Dunbar-Nasmith on submarine C7 under way. Image: edinburghs-war.ed.ac.uk.

Admiral Sir Martin Eric Dunbar-Nasmith, VC, KCB, KCMG was a Royal Navy officer and a recipient of the Victoria Cross. He was born Martin Eric Nasmith, adding "Dunbar" to his surname in 1923.

Nasmith was born on 1 April 1883 at 136 Castelnau in Barnes, which was then in the county of Surrey and is now in the London Borough of Richmond upon Thames.

¹³Wikipedia, Martin Dunbar-Nasmith, last updated 18 May 2018.

https://en.wikipedia.org/wiki/Martin_Dunbar-Nasmith

Educated at Eastman's Royal Naval Academy in Winchester and HMS Britannia at Dartmouth, Nasmith joined the Royal Navy in 1898.

Dunbar-Nasmith was 32 years old, and a lieutenant commander during the First World War, when the following action took place for which he was awarded the VC.

During the period 20 May to 8 June 1915 in the Sea of Marmara, Dardanelles, Turkey, Lieutenant-Commander Nasmith, in command of HM Submarine E11, destroyed one large Turkish gunboat, two transports, one ammunition ship, three store ships and four other vessels.

He took command of submarine J4 after it was commissioned during 1916 and 1917.

His active service naval career spanned 1898 to 1946 however after the war he continued to serve in several roles. Vice Chairman Imperial War Graves Commission (1948–54), Deputy Lieutenant and Vice-Lord Lieutenant Morayshire, Vice-Admiral of the United Kingdom (1954–62).

He died on 29 June 1965 (aged 82) at Elgin, Elginshire, England.

A3.2 Edward Courtney Boyle¹⁴



***Edward Courtney Boyle on the deck of his submarine E14 in the Sea of Marmara, May 2015.
Image: Wikiwand.com***

Edward Boyle was born at Carlisle, Cumberland (now Cumbria) on 23rd March 1883 and he was the son of Lieutenant Colonel Edward Boyle.

At the time of the 1901 Census he was listed as a Midshipman serving in the 12,350 ton Twin Screw Battle Ship HMS Renown – the Flag Ship on the North America and West Indies Station.

He was promoted to Sub Lieutenant on 15th September 1902. Sub Lieutenant Boyle was appointed to the Submarine Depot Ship HMS Thames 'Additional for Training' on 4th July 1904.

He occupied several positions in submarine depot ships and submarine commands up to the beginning of World War I.

¹⁴ Everipedia Edward Courtney Boyle. https://everipedia.org/wiki/Edward_Courtney_Boyle/

After the outbreak of the First World War HMS Adamant moved bases to Harwich. Edward Boyle was then appointed to the Submarine Depot Ship Maidstone (8th Submarine Flotilla) at Harwich 'for Submarine E14 in Command' on 19th October 1914. During his time in Submarine E14 Boyle was 'Mentioned in Dispatches' for a patrol in the Heligoland Bight.

After working in the North Sea Submarine E14 was sent to the Dardanelles, leaving Harwich on 27th March 1915 in company with Submarines E11 and E15, and arriving at Mudros on 9th April 1915. Submarine E14 first completed the passage of the Dardanelles and entered the Sea of Marmora on 27th Apr 1915 remaining there until 18th May 1915

A second patrol was made in the Marmora from 10th June 1915 to 3rd July 1915. Edward Courtney Boyle, Royal Navy was promoted Commander on 30th June 1915 for his Dardanelles efforts as well as being awarded the Victoria Cross - see London Gazette dated 21st May 1915 for his first Dardanelles patrol.

On returning home Edward Boyle was appointed to the Submarine Depot Ship HMS Titania (11th Submarine Flotilla) at Blyth 'for Submarines' on 10th August 1916 and then for 'Submarine J5 in Command' from 18th September 1916. He left Submarine J5 and was appointed to HMS Dolphin on 12th October 1918.

Edward Boyle survived the War and, in January 1919 he was serving under the Australian Government as the Commanding Officer of the Submarine Depot Ship HMAS Platypus to which he was appointed on 28th October 1918.

He was re-appointed to HMAS Platypus on 25th March 1919 'in Command' and 'for Command of Australian Submarine Flotilla' and then sailed for Australia with the Flotilla of six J Class Submarines which were 'gifted' to the Royal Australian Navy. Edward Boyle was promoted to Captain on 30th June 1920. He returned home after the Australian Submarine Flotilla was 'Paid Off' on 12th July 1922.

On 18th October 1932 he was placed on the Retired List with the rank of Rear Admiral.

He was recalled for further service during WWII and, on 24th August 1939 Rear Admiral (Retired) Edward Boyle was appointed to HMS Pembroke 'for Miscellaneous Duties'. He reverted to the Retired List in June 1943.

Edward Courtney Boyle died following an accident on 15th Dec 1967 when he was knocked down by a lorry on a pedestrian crossing at Ascot, Berkshire. He died of his injuries on the following day at the age of eighty four. His funeral took place at the Woking Crematorium in Surrey.

A3.3 Sir Max Kennedy Horton¹⁵



Admiral Max Kennedy Horton. Image: BBC News.

Admiral Sir Max Kennedy Horton, GCB, DSO & Two Bars, SGM was a British submariner during the First World War and commander-in-chief of the Western Approaches in the latter half of the Second World War, responsible for British participation in the Battle of the Atlantic.

He was born at Rhosneigr, Anglesey on 29 November 1883 and died on 30 July 1951 (aged 67) in London.

Horton joined the Royal Navy in 1898 aged 15.

Historians say Admiral Sir Max Kennedy Horton arguably played as big a role in the Allied victory of the Second World War as Field Marshal Montgomery or Bomber Harris.

¹⁵Wikipedia, Max Horton, last updated 11 May 2018. https://en.wikipedia.org/wiki/Max_Horton

Having been promoted to full Admiral on 9 January 1941, Horton was appointed Commander-in-Chief, Western Approaches Command on 17 November 1942. Here he instituted a series of tactical changes in the way the escort ships were to be used. In addition to the existing escort group system, in which groups of ships were assigned to defend the perimeter of convoy boxes, Horton instituted a system of support groups, who would also travel with the convoys, but have much more freedom in pursuing submarines to the death, even if such action necessitated leaving the convoy for longer periods of time than were considered acceptable for escort groups. Horton's support groups proved to be decisive in the crucial spring of 1943, taking the battle to the U-boats and crushing the morale of the U-boat arm with persistent and successful counterattacks. Horton is widely credited, along with his predecessor, Admiral Sir Percy Noble, as being one of the most crucial figures in the Allied victory in the Atlantic.

Yet in the village of his birth, Rhosneigr, he is barely even known.

Operating from Reval E9 did a large number of patrols, sinking a destroyer and heavily damaging the German heavy cruiser SMS Prinz Adalbert, besides intercepting and sinking a large number of merchant ships carrying the vital iron ore from Sweden to Germany.

Returning from Russia in 1915, Max Horton assumed command of the very large submarine J6 and did a number of strenuous patrols in the North Sea. Later Horton was selected to command and supervise the building of the experimental submarine M1. She was a notable departure from existing design, carrying, in addition to her torpedo armament a twelve-inch gun mounted in a turret¹⁶.

¹⁶U-boat.net, Fighting the U-boats, Allied personalities, <https://uboot.net/allies/personnel/>

A3.4 Pembroke Dockyard¹⁷



Pembroke Dockyard. Image: ports.org.uk.

Paterchurch

Before the arrival of the Royal Naval Dockyard on the southern bank of the Cleddau estuary, the site of present-day Pembroke Dock was an isolated farming community called Paterchurch.

The only surviving remains of Paterchurch are of a tower from the medieval manor which is thought to date from the 1300s to 1400s. Paterchurch Tower is within the present day walls of the dockyard, and survived in spite of the rest of the estate falling into ruin and being demolished to make way for the dockyard in the first half of the 1800s.

The Royal Dockyard

Royal Navy shipbuilding on the Cleddau estuary began in the late 1700s with a report recommending the construction of a dockyard here. At this time, neither Milford Haven nor Pembroke Dock existed as any kind of settlement.

The Royal Navy started building ships on the northern shore of the Cleddau, on land near Hubberston, under the title 'Milford'. A dispute over the price of the land meant that they moved, settling on a site 5 miles away, on the southern bank of the Cleddau, near to Pembroke.

¹⁷Pembroke Dock Heritage Centre, Pembroke Dock Sunderland Trust.

<http://www.sunderlandtrust.com/about-us/brief-history/>

The town of Pembroke Dock was established in 1814 with the start of the Royal Navy Dockyard.

Shipbuilding

As the Royal Navy Dockyard began to be established, construction immediately started, and in February 1816 the first ships to be built there were launched.

Over its 112 years of active service, the Dockyard saw the construction of five Royal Yachts and 263 other Royal Naval vessels. The last ship built there was launched in April 1922.

Defending the Town

As the Royal Dockyard grew rapidly in size and importance so did measures to defend it. In 1844 work began on the huge Defensible Barracks, overlooking the new town. After a remarkably short build time, Royal Marines moved in a year later. As part of a chain of fortifications along the Haven, all to defend the Dockyard, two Cambridge Gun Towers were constructed to the west and east sides of the dockyard. These are dated 1851 and locally are known as 'Martello Towers'.

RAF Pembroke Dock

In 1930, four years after the Dockyard's closure, the Royal Air Force began establishing a flying boat base – this continued for 29 years. Here in the 1930s several flying boats were introduced into service, including the Sunderland in 1938. In World War II Pembroke Dock became the world's largest flying boat station and home base to airmen from many countries. Post war Sunderlands continued in service locally until 1957 and the station closed in 1959.

Pembroke Dock Today

For 150 years Pembroke Dock was a military town, and home to all three Armed Services. The last military unit left in the 1960s and the town has striven to find new roles ever since. This fine Victorian town with its grid-like street pattern and impressive buildings has expanded considerably in the past 50 years. It still has connections to its illustrious industrial past. Today the former dockyard is a commercial port and a gateway by ferry to Ireland.

J3 and J4 were built at Pembroke Dock. Both were laid down in 1915. J3 was launched on 4 December 1915 and completed in 1916. J4 was launched on 2 February 1916 and completed in August 1916¹⁸.

¹⁸Refer to table at 3.1.1.

A3.5 Portsmouth Dockyard¹⁹



Portsmouth Dockyard. Image: geography.org.uk.

The first recorded dry dock in the world was built in Portsmouth by Henry VII in 1495. The first warship built here was the Sweepstake of 1497; of more significance were the carracks Mary Rose of 1509 and Peter Pomegranate of 1510—both were rebuilt here in 1536. The wreck of the Mary Rose (which capsized in 1545, but was raised in 1982), is on display in a purpose built museum. A fourth Tudor warship was the galleass *Jennett*, built in 1539 and enlarged as a galleon in 1558.

Her Majesty's Naval Base, Portsmouth (HMNB Portsmouth) is one of three operating bases in the United Kingdom for the British Royal Navy (the others being HMNB Clyde and HMNB Devonport). Portsmouth Naval Base is part of the city of Portsmouth; it is located on the eastern shore of Portsmouth Harbour, north of the Solent and the Isle of Wight. Until the early 1970s it was officially known as Portsmouth Royal Dockyard (or HM Dockyard, Portsmouth); the shipbuilding, repair and maintenance element of the base was privatized in the late-1990s/early-2000s.

The base is home to one of the oldest dry docks in the world, as well as being the headquarters for two-thirds of the Royal Navy's surface fleet. The base is also home to a number of commercial shore activities (including a ship repair facility operated by BAE Systems Maritime); naval logistics, accommodation and messing; and

¹⁹Wikipedia, HMNB Portsmouth, last updated 6 April 2018.

https://en.wikipedia.org/wiki/Royal_Navy_Dockyard

personnel support functions (e.g. medical and dental; education; pastoral and welfare) provided by Defence Equipment and Support.

The base is the oldest in the Royal Navy and it has been an important part of the Senior Service's history and the defence of the British Isles for centuries. At one time it was the largest industrial site in the world. Around the year 2000, the designation HMS Nelson (which until then had been specific to Portsmouth's Naval Barracks in Queen Street) was extended to cover the entire base.

The largest vessel launched at Portsmouth during World War I was the 27,500-ton battleship Royal Sovereign in 1915. The only other launchings during the war were the submarines J1 and J2 in 1915, and K1, K2 and K5 in 1916. Some 1,200 vessels, however, underwent a refit at Portsmouth during the course of the War, and over the same period 1,658 ships were either hauled up the slipways or placed in dry-dock for repairs.

J1 and J2 were built at Pembroke Dock. Both were laid down in 1915. J1 and J2 were launched on 6 November 1915 and completed in 1916²⁰.

²⁰Refer to table at 3.1.1.

A3.6 Devonport Dockyard²¹



Devonport Dockyard. Image: plymouthdailyphotos.blogspot.com.

Her Majesty's Naval Base, Devonport (HMNB Devonport), is the largest naval base in Western Europe and is the sole nuclear repair and refuelling facility for the Royal Navy.

It is one of three operating bases in the United Kingdom for the Royal Navy (the others being HMNB Clyde and HMNB Portsmouth). HMNB Devonport is located in Devonport, in the west of the city of Plymouth, England. Having begun as Royal Navy Dockyard in the late-17th century, Shipbuilding ceased at Devonport in the early 1970s, but ship maintenance work has continued: the now privatised maintenance facilities are operated by Babcock Marine, a division of Babcock International Group, who took over the previous owner Devonport Management Limited (DML) in 2007. (DML had been running the Dockyard since privatisation, 1987).

J5, J6 and J7 were built at Devonport Dockyard. J5 was laid down in 1915, launched on 9 September 1915 and completed an April 1916. J6 was laid down in 1915, launched in 1915 and completed in 1916. J7 was laid down in 1916, launched on 21 February 1917 and completed in November 1917²².

²¹Wikipedia, HMNB Devonport, last updated 19 April 2018.

https://en.wikipedia.org/wiki/HMNB_Devonport

²²Refer to table at 3.1.1.

A3.7 HMAS Platypus, Sydney Harbour

See separate paper at Appendix 4.

A3.8 Osborne House, Geelong Submarine Headquarters²³



Osborne House, Geelong. Image: vhd.heritage.vic.gov.au.

Osborne House was originally a private residence but has since had many uses and has been vacant for long periods.

“In 1913 the Navy took up offer to use the house as an officer training college. Improvements to the buildings were carried out, including the erection of a block of buildings as quarters for unmarried seamen, two new classrooms, and alterations to the main room to provide a large barrack for 28 cadets. The college was opened by the Governor General, Lord Thomas Denman on March 1, 1913, with Prime Minister Andrew Fisher also present. Lord Denman arrived by torpedo boat, and 200 invited guests arrived by train from Melbourne. The college housed 28 cadets, four petty officers, and 10 seamen, together with the instructors and

²³Wikipedia, Osborne House (Geelong), last updated 20 January 2018.

[https://en.wikipedia.org/wiki/Osborne_House_\(Geelong\)](https://en.wikipedia.org/wiki/Osborne_House_(Geelong))

domestics. The initial class of 28 cadets was chosen from 137 candidates. It was proposed as a permanent location for the naval college as it was close to rail transport and had safe anchorage in Corio Bay, but the institution was relocated to HMAS Creswell at Jervis Bay in 1915.

Part of the site is now occupied by the Geelong Maritime Museum.

A3.9 Sandringham Yacht Club²⁴



Sandringham Yacht Club. Image: panoramio.com.

“Sandringham Yacht Club’s (SYC) history can be traced back to the Port Phillip Yacht Club (PPYC), which was originally established in 1903 adjacent to the current public jetty. The present day club burgee was the original burgee of the old PPYC, founded at Picnic Point in 1903. In 1911 Sandringham Yachting and Angling Club was founded. In 1912 Sandringham Yachting and Angling Club was renamed Sandringham Yacht Club, with the first SYC racing season conducted in 1913/1914.

In 1931 a devastating fire to PPYC resulted in the amalgamation of PPYC and SYC in 1932. Another fire in 1955 totally destroyed the original SYC Clubhouse with the Club losing all of its records and memorabilia together with most of its documented history.

With rapid rebuilding, helped by volunteer labour a new club was built for the 1956 Olympic Sailing “Finn” Class and was honoured with a visit from his Royal Highness, Prince Philip, himself a keen sailor, who later became SYC’s Commodore in Chief on the 25th January 1980 and recently visited the Club in 2000. The old Clubhouse (current car park site) was built in 1963 and the funds were raised through a debenture scheme”.

²⁴Sandringham Yacht Club web site. <https://syc.com.au/>.

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“For more than 80 years few have known that a former 274 foot (83 metre) British World War 1 submarine known as J7 has sat in the waters as a breakwater at Sandringham Yacht Club, with its rusting upper hull providing moored boats with protection from the Bay’s strong winds and waves.

Despite a world class marina these days all but engulfing the 1700 tonne sunken hulk, thousands of sailors regularly stroll past it enroute to their boats, barely giving a thought about the dramatic World War 1 North Sea naval battles it played a part in over 95 years ago.

The J class Submarine Number 7, built at Devonport Dockyard was completed in November 1917. In that time the J class were the fastest submarines in existence. Number 7 was the last J class boat to be built.

The J class of submarines was a 7 submarine class developed by the Royal Navy prior to the First World War in response to claims that Germany was developing submarines that were fast enough (22 knots) to operate alongside surface fleets. The rumours were actually false. Six were completed during mid-1916, while a seventh entered service at the end of 1917.

Although larger and more powerful than previous British submarines, the J class could not keep up with surface vessels, and operated independently during the war. Between them, the submarines sank a U-boat, and heavily damaged two battleships, with the loss of one to friendly shelling. They were equipped with a powerful long-range wireless and were ideally suited to reconnoiter in enemy water.

Following the war, the six surviving submarines were gifted to the Royal Australian Navy. When they arrived in Australia, they were all in poor condition. The boats were not refitted in England before being handed over and sailing to Australia, and had to undergo extensive refits. They were immediately refitted (from 1920) at the Garden and Cockatoo Island Commonwealth Naval Dockyards at a total cost of £407,000. The last one to be refitted was the J7 in June 1922.

It is a little ironic that the other naval relic near SYC, the ironclad Cerberus (renamed Platypus II on the 1/4/1921) acted as a depot ship to the J Class submarines whilst they were stationed at Geelong.

Four subs, J1, J2, J4, and J5, were scuttled in the ship graveyard 4 kilometers W-SW of the Heads. Two were scuttled as breakwaters, J3 near Swan Island and our J7 at SYC.

The conning tower of J4 was erected on St.Kilda pier as a starting tower for the club until 1956 when the old pier was demolished.

One of the Vickers Diesel engines of the submarines is located at Radio Australia Shepparton and in 2004 was still functional.

The decision to scrap the J7 came on the 16/1/1924 even though it was in fairly good condition after just being refitted. It was described as the last survivor of an obsolete class.

She stayed in service for the longest period providing electricity for the Flinders Naval Depot. (The J3 also served this purpose prior to scuttling).

The J7's engines were later removed and continued to provide secondary lighting, and were still to be seen as late as 1972. She was towed from Cowes where she had been lying at anchor, to Melbourne by the tug Minah and broken up at Footscray. The J7 was sold to Morris and Watts Machinery Merchant in October 1929, who after dismantling it sold it to the Ports and Harbors Department Melbourne and sunk her as a breakwater at Sandringham Yacht Club in August 1930".

Appendix 4: HMAS Platypus, Sydney Harbour

HMAS Platypus (I)²⁵

HMAS *Platypus* was built to the order of the Australian Government. After completion in March 1917 she passed to the control of the Admiralty until 25 March 1919 when she was commissioned into the Royal Australian Navy at Portsmouth, under the command of Commander Edward C Boyle VC RN, as a Submarine Depot Ship for six J Class submarines transferred as a gift from the Admiralty to the Royal Australian Navy. *Platypus* sailed from Portsmouth on 8 April 1919 and with the submarines in company proceeded to Australia via the Suez Canal, arriving in Sydney on 15 July 1919.



HMAS Platypus (1). Image: Royal Australian Navy.

²⁵ Royal Australian Navy. HMAS Platypus (I). <http://www.navy.gov.au/hmas-platypus-i>
Date of document or updates not specified. Downloaded 25 May 2018.



*HMAS Platypus in company with the J class submarines J1, J2, J4 and J5.
Image: Royal Australian Navy.*

In February 1920 *Platypus* proceeded to Port Phillip where a Submarine Depot had been established at Geelong. In May 1922 the Naval Board decided to abandon the policy of maintaining a Royal Australian Navy Submarine Service. The three J Class boats remaining in commission were paid off, and on 1 July 1922 *Platypus* proceeded to Sydney. On 12 July at Sydney she paid off as a Submarine Depot Ship and on the following day recommissioned as a Destroyer Depot and Fleet Repair Ship. Operating with the Fleet, mainly in home waters, she served in this role until 1929.

Meanwhile, in 1924, a Five Year Naval Development Programme had been approved by the Australian Government, which included the re-establishment of a Royal Australian Navy Submarine Service with a flotilla of six boats.



*Some of HMAS Platypus' crew members in October 1926.
Image: Royal Australian Navy.*

Two Royal Navy Odin Class submarines were initially ordered. Named *Otway* (I) and *Oxley* (I), the submarines reached Sydney on 14 February 1929. *Platypus* returned to Sydney from a cruise in Queensland waters the following day. She paid off on 31 March 1929 to recommission in her former role as a Submarine Tender.



HMAS Platypus with the J Class Submarines. Image: Royal Australian Navy.

The reconstituted Royal Australian Navy Submarine Service suffered from the outset from the world wide naval retrenchments beginning in 1929. On 10 May 1930 *Otway* (I) and *Oxley* (I) were paid off into Immediate Reserve with provision for one day diving exercises per fortnight each boat. As a result it was decided to use *Platypus* as a Depot Ship at Garden Island, acting also as parent ship for the submarines.

Platypus paid off on 15 August 1929 and the following day commissioned as HMAS *Penguin*. In April 1931 *Otway* (I) and *Oxley* (I) were transferred to the Royal Navy. *Platypus* continued in service as the Depot Ship at Garden Island, Sydney, under the name of *Penguin* until 26 February 1941 when she recommissioned as HMAS *Platypus* to resume seagoing service as a training ship.

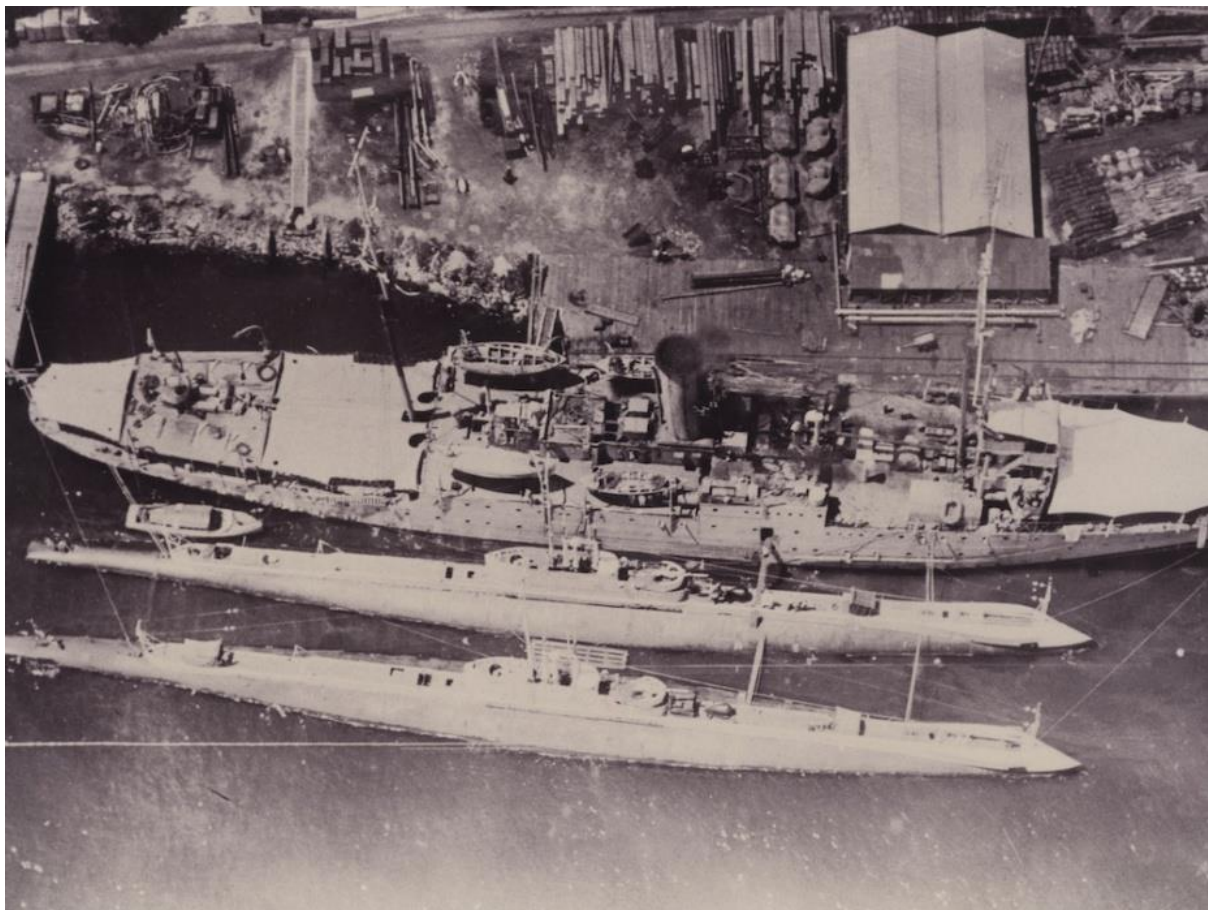
In May 1941 she proceeded to Darwin. She was present in Darwin Harbour on 19 February 1942 when Japanese carrier borne aircraft made the first air attack on Australian soil. According to the official history of the Royal Australian Navy in World War II, '*Platypus* fought back hard, and though near-missed three times and with the lugger *Mavie* alongside her sunk escaped with damage in the engine room which immobilised her for some time.'

She remained in service as Base Ship, Darwin, until 1 January 1943 when she sailed for Cairns where she again served as Base Ship until May 1944.

At Williamstown, Victoria, on 12 June 1944, *Platypus* commenced a major refit and conversion of two of her four boilers to oil burning. The refit was completed in December 1944. On 5 January 1945 she left Sydney to proceed to New Guinea for service as a Repair and Maintenance Vessel.

Platypus operated in the Madang, Hollandia and Morotai areas until the end of November 1945, returning to Australian waters in December 1945. On 12 February 1946 she departed Melbourne for Sydney on her final sea voyage under her own power. *Platypus* paid off into Reserve at Sydney on 13 May 1946.

Platypus was sold on 20 February 1958 to Mitsubishi Shoji Kaisha Ltd, of Tokyo, Japan, for scrap. In June 1958 the Japanese salvage vessel *Tukoshima Maru* departed Sydney for Japan with *Platypus* and the former Bathurst Class minesweeper, HMAS *Dubbo* (I), in tow.



*HMAS Platypus alongside the two Odin Class Submarines, HMAS Oxley and HMAS Otway.
Image: Royal Australian Navy.*

Type	Submarine Depot Ship
Builder	John Brown and Co Ltd, Clydebank, Scotland
Laid Down	14 October 1914
Launched	28 October 1916
Launched by	Mrs Fisher, wife of the Australian High Commissioner to the United Kingdom
Commissioned	25 March 1919
Decommissioned	13 May 1946
Dimensions & Displacement	
Displacement	3,476 tons
Length	325 feet
Beam	44 feet
Draught	15 feet 8 inches
Performance	
Speed	15.5 knots
Propulsion	
Machinery	2 sets of triple expansion reciprocating steam engines, twin screws
Armament	
Guns	1 x 4.7-inch gun
Awards	

Appendix 5: Time Line of Key Dates

1915-1916 7 J class submarines laid down

1915-1917 7 J class submarines launched

1916-1917 7 J class submarines completed

15 October 1918 J6 sunk in the North Sea by friendly fire

1918 (date??) 6 remaining J class boats gifted to Australia

8 April 2019 to 15 July 2019 6 remaining J class boats sailed to Australia

1920 -1921 (over one year) J3 & J7 undergo deep refits

Status of all J class boats at April 1921:

J1 Battery unsafe, needs immediate replacement, cannot dive

J2 Serious defects – in need of immediate refit

J3 Most defects repaired with new battery about to be fitted

J4 In service – battery replacement scheduled December 1921

J5 In service – battery replacement scheduled February 1922

J7 Defects will be rectified by December 1921, battery replacement scheduled May 1921

March 1922 or 19 November 1923 (depending on which reference is used) The decision to scrap the submarines J1-5 was taken following a cut in the defence budget by some 500,000 pounds.

10 July 1924 J4 sank at moorings at Williamstown and was successfully raised

1924 (date??) J1 & J2 sold by RAN

26 May 1926 J1 scuttled off Port Phillip heads at ship graveyard

1926 (date??) J3, J4 & J5 sold by RAN

1922 to 1926 (date??) J2, J4 & J5 scuttled off Port Phillip heads at ship graveyard

1927 (date??) or 1929 (date??) (depending on which reference is used) J7 sold by RAN

1930 (date??) J7 sunk as breakwater at Sandringham Yacht Club.

Appendix 6: Map



Location of J class sites around Port Phillip Bay. Image: Microsoft.

Key:

J1 J2 J4 J5: Location of 4 boats scuttled

J3: Location of J3 as breakwater at Swan Island

J7: Location of J7 as breakwater at Sandringham Yacht Club

Black Square: Location of Geelong Submarine Base

Change Control

VERSION 1	9 APRIL 2018		STARTED DRAFTING OP
VERSION 2	15 APRIL 2018	3100 WORDS	CONTINUED DRAFTING OP
VERSION 3	17 APRIL 2018	3481 WORDS	CONTINUED DRAFTING OP
VERSION 4	22 APRIL 2018	3867 WORDS	CONTINUED DRAFTING OP
VERSION 5	30 APRIL 2018	6430 WORDS	CONTINUED DRAFTING OP + ADDED SOME IMAGES
VERSION 6	15 MAY 2018	7073 WORDS	ADDED IMAGES AND ASSOCIATED DARWINGS
VERSION 7	18 MAY 2018	7215 WORDS	ADDED FURTHER DRAWINGS
VERSION 8	3 JUNE 2018	11685 WORDS	ADDED APPENDIX 3
VERSION 9	6 JUNE 2018	12205 WORDS	ADDED APPENDIX 4 AND 5; NOMINATION LETTER
VERSION 10	7 JUNE 2018	12303 WORDS	ADDED HERITASGE LISTINGS + EDITINGVERSION
VERSION 11	9 JUNE 2018	12093 WORDS	CHECKING TEXT
VERSION 12	17 JUNE 2018	12335 WORDS	FORMATTING